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RUPTURE OF THE MALE URETHRA*

BY GEORGE GILBERT SMITH, M.D.,† AND E. ROSS MINTZ, M.D.†

TRAUMATIC rupture of the urethra is not of frequent occurrence. In the past twenty years, twenty-eight cases were admitted to the Massachusetts General Hospital. These twenty-eight cases, together with two others encountered in private practice by one of us, supply the data upon which this article is based.

The etiology of this condition is well known, and consists of several types of injury. Rupture of the penile portion sustained in coitus is rare; we met with one such case. Rupture of the bulbous portion caused by a blow on the perineum occurred in twelve cases. In most of these accidents the patient fell astride of some hard or pointed object—such as a fence, a beam, a chair-back or the edge of a barrel. Complete rupture of the urethra between the two layers of the triangular ligament was brought about in one case by penetration of the perineum by the leg of a stepladder upon which the patient impaled himself. A remarkable case was that of a boy of eleven who, finding an unexploded shell in a field adjacent to Camp Devens, pounded it until it exploded. The boy's right arm was blown off and a fragment of the shell entered the perineum, after first carrying away the right testicle. The piece of metal, after perforating the anterior wall of the rectum and the prostatic urethra, lodged in the perineum.

Five cases of rupture were due to falls from staging, cars and wagons. In four of these there was an associated fracture of the pelvis. Ten cases were due to crushing injuries, the patient having been caught between cars, between a steamer and the wharf, or between the jaws of an excavating bucket. In nine of these cases the pelvis was fractured. In many of them the exact extent of the injury was not clear, nor was it possible to say whether the urethral injury was caused by a spicule of bone or by the bladder being torn from the urethra by direct force. Garlock[7] reports a case of rupture of the urethra due to sudden muscular effort, without any external trauma at all.

The urethral injury may consist of a simple abrasion or interstitial rupture of the urethra without loss of continuity, of a partial rupture, or of a complete separation of the ends of the divided urethra. The case of injury to the penile urethra showed a complete division of the canal, the ends being one and one-half inches apart; there was a wedge-shaped tear extending into both corpora cavernosa. In ruptures of the bulbous portion due to direct trauma, as much as two inches of the urethra may be actually destroyed. In such cases there is great laceration of the periurethral tissues, accompanied by extensive infiltration with blood; the devitalized tissues are easily infected and may become gangrenous.

Injuries to the urethra proximal to the triangular ligament consist of lacerations caused by spicules of bone, or of complete rupture at the apex of the prostate. In the former, blood and urine may fill the space of Retzius, and an instrument passed into the urethra may leave the canal and enter the perivesical space. In the latter, the bladder and prostate may be carried upwards by the blood which pours out from the plexus of veins surrounding the prostate, so that all connection with the lower urethra is lost. Young[10], in a paper read before this Association in 1928, described a number of cases of this type.

The symptoms of ruptured urethra are: bleeding from the meatus, which may be least in amount when the rupture is complete, difficulty in voiding, and the evidences of periurethral trauma, such as hematoma of the perineum, scrotum and lower abdominal wall. Interference with urination may vary from slight discomfort and difficulty in voiding to complete retention. It is surprising to find that even in some cases of complete rupture, the patient is at first able to void; within a short time urination becomes increasingly difficult and perhaps impossible. In one of our cases in which a fall astride the back of a chair caused complete separation of the torn ends of the bulbous urethra, the patient was able to void for six weeks after his injury.

In all ruptures except those of slight extent, the passage of a catheter as far as the bladder is usually impossible. If the rupture is above the triangular ligament, the catheter may pass into the perivesical space, and the drawing of pure blood may lead the surgeon to believe that the bladder is ruptured. In those cases which are complicated by pelvic fractures, there is almost always profound shock.

As to the treatment, these patients may be divided into two classes. Those with perineal in-

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Read at a Meeting of the American Association of Genito-Urinary Surgeons, June 5, 1931.

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juries and without other severe complication, such as fractured pelves or femora, may be treated with the object of immediately restoring the integrity of the urethra. Marion[8], who is very conservative in his management of these cases, advises against any interference, even the passage of a catheter, if the patient is able to void. If he cannot void, the passage of a soft rubber catheter should be attempted; if that is successful, a catheter should be left in the urethra until the rupture is healed. Extensive hematoma should be incised and drained. If a catheter cannot be passed, Marion advises suprapubic cystotomy; the repair of the urethra may be accomplished at the same time or may be left until later.

This conservative position does not seem to be held by most American surgeons. Young[10] advocates immediate repair when that is possible. Berry[3] of Montreal, who reports thirty-six cases of rupture of the bladder and urethra, is of the same opinion. Berry[3], G. G. Davis[5], Banks[2] and Flandrin[6] advocate, as does Marion, suprapubic cystotomy and retrograde catheterization. We believe that this is not necessary in the majority of cases. In our series there were thirteen cases of rupture in the bulb which were successfully treated without cystotomy. Among these thirteen patients there were seven with complete ruptures, on whom end to end suture was performed. Four, who had only partial ruptures, had perineal section and a catheter passed either through the perineum or through the entire urethra. One was treated by indwelling catheter alone, and one in whom a catheter could not be passed, recovered without any operation. Another patient who was treated by indwelling catheter without operation developed extensive gangrene of the perineum. Perineal incision was performed three weeks after entrance, but the patient died two days later. This was the only death among the cases of rupture unaccompanied by fracture of the pelvis. The time spent in the hospital by those who recovered ranged from eleven to fifty-eight days, with an average stay of twenty-five days.

These cases were operated upon by different surgeons, but in no instance was there, apparently, any great difficulty in finding the proximal end of the urethra. A suggestion made by Garlock may prove worth remembering. He says that pressure on the bladder causes urine to trickle from the severed urethra, thereby locating the proximal end. Another point worth bearing in mind is made by Flandrin[6], who, in three cases of rupture of the bulbous urethra, found a loss of substance of the urethral wall. He followed the Guyon-Noguès technic, which consists in suturing the naked tissues of the bulb over a catheter passed through the urethra. The canal so formed becomes lined with epithelium and functions satisfactorily. The catheter should be retained for from thirty-five to forty days, as Noguès, by experimenting with dogs, found that such a canal became lined with epithelium in about six weeks.

When rupture of the urethra is complicated by pelvic or femoral fractures, the prognosis is very different. Shock in itself may cause death within a few hours, especially when it is augmented by extensive perivesical hemorrhage. The clinical picture is unmistakable; the patient is cold and pallid, the scrotum, groins and lower abdominal wall are discolored by subcutaneous hemorrhage. There may be a trickle of blood from the urethra. Palpation of the lower abdomen tells but little, as the muscles are in spasm. Upon passing a catheter, the instrument may be obstructed in the region of the triangular ligament or may pass this point and draw only blood. The latter phenomenon may be due to rupture of the bladder, or may result from the drainage of an extravesical hematoma, the catheter having left the urethra. What, then, is the proper surgical procedure? The one which is generally accepted is immediate suprapubic cystotomy; this seems to us to be the only safe method of treatment, in spite of its high mortality. The bladder should be explored for rupture, and extravesical hemorrhage should be controlled by packing. Whether any attempt should be made to repair the urethral injury depends upon the condition of the patient. If there is evidence of much injury to the perineal tissues, simple incision for drainage of the hematoma is indicated. If this is not done, necrosis of these tissues may occur. The retrograde passage of a catheter appears to be a worth-while measure; if it is possible, it takes but very little time, and may make later repair operations unnecessary. If there is no evidence of rupture of the bladder and the patient is not in too much shock, a perineal operation along the lines described by Hugh Young[10] may be the wisest course to follow. Approaching the prostate and membranous urethra as if about to do a perineal prostatectomy, one can repair posterior urethral injuries and restore the integrity of the canal.

The gravity of urethral rupture when associated with pelvic fracture is shown by the results obtained in the thirteen cases in our series. Of the four patients whose injuries resulted from falls, all of whom had cystotomies, three died within twenty-four hours. One, a boy of nine, lived. Of the nine patients whose injuries were of the crushing type, five died. In this group, three of the deaths occurred much later than in the first group, and were due, apparently, to sepsis in or about the urinary tract. One patient, who was not operated upon, died a few hours after admission; another, who died three days after being struck by a taxicab, had fractures of the pelvis, the left femur, and possibly of the skull. Of the four patients who lived, one had no operation, but was drained by catheter for sixteen days; one had a cystotomy and retrograde catheterization and was dis-

charged in thirty-one days; one had cystotomy and left the hospital after fifty days, wearing a suprapubic tube; and one had cystotomy, perineal section and retrograde catheterization; he was discharged eight weeks after operation.

Several observers (Abbott[1], Young[10]) report cases of urethral rupture associated with pelvic fracture in which impotence resulted. This condition is believed by Abbott to be due to rupture of the greater and lesser cavernous nerves. This result has not been noted in any of our cases, but the point has not been made the subject of particular inquiry.

Brief abstracts of some of the more interesting cases in this series are as follows:

RUPTURE OF THE PENILE URETHRA

G. T., an Italian of thirty-two, stated that one week before entrance, while attempting intercourse, his penis bent double and caused instant severe pain, followed by swelling. He called a doctor, who tried unsuccessfully to pass a catheter, and then put him to bed with hot Lysol dressings. The patient was able to void until the evening before admission to the hospital.

Examination showed the penis to be crooked, swollen and almost beyond recognition, with dark brown, thin fluid leaking from the meatus. The scrotum was somewhat swollen and showed a bluish discoloration.

Operation (G. G. S.)—A filiform bougie could not be passed through the urethra. Median perineal incision was made. A dilated urethra was opened with escape of urine; instruments were passed easily to the bladder. When passed forward, they entered a cavity beneath the skin of the penis. A tube was passed to the bladder. A longitudinal incision was made through the skin of the penis, thereby opening a cavity between the body and skin of the penis from scrotum to corona. The urethra was found completely divided with ends about one and one-half inches apart. There was a wedge-shaped tear in both corpora cavernosa. The ends of the urethra were freed and drawn together about a catheter and sutured with chromic catgut. The cavity was packed wide open with gauze. A urethral fistula developed. Operation (G. G. S.), thirteen days after the first operation:—Elliptical incision about fistula on left side of penile urethra. Edges of incision closed in layers by a figure eight silkworm gut suture. Patient discharged forty-one days after entrance.

W. S., 45 years old, was hanging paper from a low stepladder when suddenly the ladder overturned. The patient landed with his perineum against one leg of the now bottom-side-up stepladder. He got up readily and walked to the elevator. Because he was bleeding profusely from the wound in his perineum, he entered the hospital. In the emergency ward he was unable to pass urine and catheterization was impossible. A cystotomy was done at once. Physical examination showed a large triangular area of ecchymosis covering the perineum from the base of the scrotum to the anus and some swelling of tissues under this area. Just at the right of the anus was a punch or stab wound, which was bleeding profusely. Seventeen days later a second operation was done (G. G. S.). A sound was passed but did not go beyond the triangular ligament. Through a curved preanal incision the posterior aspect of the prostate was exposed. It was found that the blow had separated the two layers of the triangular ligament and severed the urethra in this region. A bougie was passed from the bladder downwards, emerging in the center of the posterior leaf of the triangular ligament. A catheter was passed through the urethra. The urethra was not sutured. The two leaves of the triangular ligament were well approximated with catgut sutures, bringing the severed ends of the urethra into close apposition about the catheter. The suprapubic wound healed a month after cystotomy and the urethral catheter was removed thirteen days following the perineal section. The patient voided well. He has been followed in the Out-Patient Department and sounds have passed without difficulty.

J. A. B., a physician of sixty-one, fell astride the back of a chair, striking his perineum. He bled freely from the urethra at first, and continued to pass some blood for ten days. Voiding was very painful and rather difficult. For about a month he was able to void satisfactorily, but in the next two weeks the stream became progressively slower until it stopped almost entirely.

Examination showed a hard mass 1.5 centimeters in diameter in the perineum. A filiform bougie could not be passed beyond this point. At operation (G. G. S.) the urethra was found to be completely severed, with a pocket containing infected urine about the two ends. These were torn irregularly, but by freeing them, they could be dovetailed together and sutured. A catheter was left in the urethra for twelve days. There was never any urinary leakage and the patient was discharged sixteen days after operation. Five months later the urethra admitted a 28 French sound without any difficulty.

A. M., aged eleven, on May 11, 1928 hammered an unexploded shell which he found in a field near Camp Devens. The shell exploded, blowing off the boy's right hand and right testicle. A fragment entered the perineum and lodged there, after puncturing the anterior rectal wall. On May 12, 1928, suprapubic cystotomy was performed. A week later the fragment of shell and a piece of the pubic bone were removed from the perineum. Two weeks later the suprapubic tube fell out, after which the urine, as well as gas and feces, drained from the perineum. On June 19, 1928 the patient was admitted to the Massachusetts General Hospital and on June 29 he was again operated upon (G. G. S.). Through a curved preanal incision, the posterior aspect of the prostate was exposed. The rectum was found to be adherent to the prostatic urethra, with a fistula between the two. The rectum was freed from the prostate and the rectal fistula was closed. A catheter was passed through the urethra. Part of the right lateral wall of the bulbous urethra was lacking. A month later the patient was discharged. The perineal and rectal wounds had closed, but when the boy voided, a part of the urine escaped through the wound in the right groin. Two months later this leak had almost ceased, and could be controlled by pressure.

CONCLUSIONS

1. Thirty cases of traumatic rupture of the urethra are reported, of which thirteen were complicated by fractures of the pelvis.

2. Of the cases not complicated by fractures, in two there was no operation; in two preliminary cystotomy with later repair of the urethra; in seven, perineal section with suture of the divided urethra; and in six, perineal section without suture of the urethra. There was one death (6%).

3. Of the thirteen cases complicated by fractures, in two there was no operation (one death); in two, suprapubic exploration but not a cystotomy (two deaths); in nine, suprapubic cystotomy (five deaths). The total number of deaths was eight, a mortality of 61.5%.

4. Simple ruptures of the bulbous urethra caused by blows upon the perineum can usually

be repaired by perineal operation without a suprapubic cystotomy. Cases complicated by fracture of the pelvis, in which there is ordinarily much perivesical bleeding, should have a suprapubic cystotomy.

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THE EARLY DIAGNOSIS AND EARLY TREATMENT OF ARTERIOLAR (ESSENTIAL) HYPERTENSION*

BY DAVID AYMAN, M.D.†

THE adequate treatment of any disease necessitates its early diagnosis. The early diagnosis (as well as prevention) of essential hypertension, however, has not as yet been included within the active scope of modern medicine. At least four factors have hindered the study and adoption of methods for discovering this disease early and possibly preventing its occurrence. One of these has been the justifiable fear of producing anxiety in the patient by too frequent blood pressure determinations. This fear has not prevented physicians from investigating the members of tuberculous families, or from making physical examinations, x-ray studies, tuberculin studies, sputum examinations, and other tests that produce mental perturbation and anxiety states. It is pertinent to cite a recent study of hypertension in the course of which eight patients made blood pressure readings on themselves twice daily over periods up to three years. "In no instance was it felt that the method was harmful psychically[1]." Those families in which essential hypertension is suspected certainly deserve the same degree of early attention and study as those in which tuberculosis is questioned.

The second important deterring factor in the early diagnosis and prevention of essential hypertension is the lack of a specific therapy. A similar deficiency in tuberculosis has not prevented vigorous attempts to recognize that disease early, and to treat it successfully. It should be remembered, moreover, that just as in the diseases that have a specific therapy, success in the treatment of essential hypertension should be greatest in the early cases. Furthermore, no one has yet thoroughly studied and applied present or past modes of therapy in a group of patients with early hypertension. Therefore, it is no more reasonable to cite the therapeutic failures in advanced essential hypertension, than it is to condemn arsphenamine therapy because it cannot restore the advanced paretic to health.

The third reason for the delay in early diagnosis is due to the frequent though unjustified assumption that the disease commences in middle life, so that many physicians do not take the blood pressure of their young adults. It has been shown, however, that a fairly large number of people have arterial hypertension in early life[2] and the recent important work of Alvarez and Stanley[3] supports the view that it begins in youth. They showed that in a prison population of 6,000, there was as high an incidence of hypertension at the age of fifteen as at the age of forty. Moreover, in the history of a large percentage of hypertensive patients one finds that their vasomotor symptoms, such as flushing, sweating, and cold hands and feet, began in early life, while in control patients with normal blood pressure there is a comparatively small incidence of such symptoms in youth[4]. We must constantly bear in mind, therefore, that the disease frequently begins early in life.

Finally, the frequent omission of early diagnosis occurs because most physicians, excluding those with insurance companies, do not consider with enough suspicion elevations of blood pressure mildly above average standards, especially in their younger patients. Some might disregard a systolic blood pressure of 140 mm. in a man of 30, but most insurance companies would reject him, for reasons to be detailed later. Since it is probable that in the earlier stages of the disease the blood pressure is at a lower level than in the advanced stages, the physician must label as cases of essential hypertension all those in which the blood pressures are more or less persistently above the accepted standards.

STANDARDS OF NORMAL BLOOD PRESSURE

The accepted standards of average normal blood pressure have been changing. Formerly, one considered that the "age plus one hundred rule" was satisfactory, but this has been shown to give too high a normal standard. "It is war-

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rantable to conclude from the concurrent evidence of the extended statistical data now available that the idea of an extensive progressive rise of systolic blood pressure in healthy persons as life goes on is an erroneous one.[5]'' In 250,000 blood pressure determinations, Rogers and Hunter[6] found that the average systolic ranged only from 120 mm. at the age of 20, to 135 mm. at the age of 60. Even these standards may be too high, since many of the 250,000 determinations inevitably must be slightly elevated readings due to nervousness. Furthermore, since insurance companies have accepted people for insurance on an original assumption that the normal pressure rises from youth to old age, it is inevitable that the average ''normal'' blood pressure of these accepted people will show a rise with advancing age such as seen in Rogers and Hunter's figures. As evidence for the probability that the average standards are even lower, it is important to cite again Alvarez and Stanley's recent work in which they determined the blood pressures of 6,000 prisoners[3]. They found that in these prisoners there was no rise in blood pressure as age advanced, and that the most common systolic blood pressure at all ages between 15 and 60 was 115 mm. ''Again it has been demonstrated that the level of pressure in most persons does not rise even in old age[3].'' However, until more extensive evidence like that of Alvarez and Stanley is forthcoming, it is necessary to use as average standards for Americans the figures of Rogers and Hunter. These figures may be given a leeway of 10 mm. in either direction, so that 145 may be considered the upper normal systolic level at the age of 60. Beyond a variation of 10 mm., insurance statistics show, without doubt, that there is a mortality increase which is in direct proportion to the pressure elevation (Table 1)[7].

TABLE 1

THE RELATIONSHIP BETWEEN AN INCREASE OF SYSTOLIC BLOOD PRESSURE OVER THE AVERAGE AND MORTALITY (FISHER)

Mm. over average systolic blood pressure for age	Mortality	Extra Mortality
10-14	136.1%	36.1%
15-24	183.8%	83.8%
25-34	204.4%	104.4%
35-49	248.5%	148.5%
50+	414.7%	314.7%

DIFFERENTIAL DIAGNOSIS OF ESSENTIAL HYPERTENSION

In people whose systolic or diastolic blood pressure is more than 10 mm. above the average for their age, essential hypertension may be diagnosed only after excluding the other causes of arterial hypertension. It is helpful to visualize the disease, essential hypertension, as one member of a large group of conditions associated with the common factor, arterial hypertension, just as typhoid fever is but one of the many diseases associated with fever.

With this in mind one should first distinguish those cases of arterial hypertension that are acute and transitory. This is not simple and usually cannot be accomplished at the first visit, for a drop of the blood pressure to a normal level after rest does not rule out early essential hypertension. The acute nephritides, in which one finds an acute infection, edema, and a urine showing a high specific gravity, albumin, red blood cells, and cellular casts, constitute a frequent cause of acute transient hypertension. A more acute hypertension is the so-called paroxysmal hypertension or ''vascular crises'' of Pal, which occur during angina pectoris, renal and lead colic, tabetic crises or, rarely, associated with certain adrenal tumors. In the late stages of pregnancy one frequently encounters elevations of blood pressure which usually return to a normal level after the puerperium. It has been suggested that many of these gravid patients may be early cases of essential hypertension, patients who respond in this way to the unusual stress and strain of pregnancy[8]. The most common cause of transient arterial hypertension is that which is due to emotional excitement. Emotional hypertension may simulate essential hypertension for many years[9]. Whether the earliest clinical manifestations of essential hypertension are purely those of an emotional hypertension is a possibility not proved. However, all patients who have what apparently is emotional hypertension, especially those who have a family history of vascular disease or who have the hypertensive personality, should be observed for a reasonably long period of time before being discharged as cases of emotional hypertension only.

Given a case of chronic hypertension, it is necessary for prognosis and therapy to determine whether one is dealing with chronic nephritis. It is often impossible to decide whether the condition is one of chronic nephritis secondary to preceding essential hypertension, or a primary disease in the kidneys. There are some authorities who believe that most cases of chronic nephritis with arterial hypertension are secondary to an essential hypertension[10]. At any rate, one may make a diagnosis of chronic nephritis by the presence of renal symptoms such as nocturia and polyuria and by the chemical and microscopic study of the urine, together with the aid of renal function tests, one of the most delicate of which is the dilution and concentration test. Despite normal results in renal function tests, there must be a certain number of patients in whom the diagnosis of chronic vascular nephritis is overlooked because the kidneys will function normally by such tests when even 50% of the kidney tissue is removed or destroyed[11].

CLINICAL MANIFESTATIONS OF EARLY ESSENTIAL HYPERTENSION

With all the secondary causes of arterial hypertension absent, the diagnosis must be the disease called "essential primary hypertension". This may more accurately be termed "essential arteriolar hypertension", thus designating the arterioles as the cause of the elevated blood pressure. It is understood that the arterioles are the small-calibered arteries occurring just before the capillaries. It is generally believed that there exists a constriction of the arterioles which, conceivably, may be due to something stimulating either the vasomotor center, the vegetative vasoconstrictor nerves or, directly, the smooth muscles of the arterioles. It is just as possible, however, that this unknown pressor factor may be the normal physiological body stimuli, or external stimuli, acting upon a hypersensitive vasomotor center, vasoconstrictor nerves, or arteriolar muscle, the hypersensitivity being of hereditary, constitutional, metabolic, or infectious origin. Aside from these hypothetic considerations, it is certain that heredity, in some manner, is a definite etiologic factor in essential arteriolar hypertension.

The Variability of the Blood Pressure.—The most important characteristic of essential hypertension is not the elevation of the blood pressure but rather the fluctuation or variability of the blood pressure[12]. Such a statement may seem at variance with the usual description of the blood pressure in essential hypertension as being persistently elevated. The use of the word "persistent" in textbooks is not meant to convey that the blood pressure remains at a fixed high figure, but rather that, in contradistinction to the acute types of arterial hypertension, it tends to remain above the normal level even though it fluctuates greatly above this level. This variation of the blood pressure occurs to some degree in practically all patients with essential arteriolar hypertension. This essential feature may be observed not only by determinations of the blood pressure on separate visits, but also may be found on frequent determinations of the blood pressure at any one visit. Its absence usually indicates insufficient observation. If a patient with essential arteriolar hypertension is seated in a quiet room, and the blood pressure taken at intervals of five minutes for twenty minutes, one may secure a drop of 30, 40, 50 and, in occasional cases of 100 mm. of Hg. in the systolic blood pressure. When the patient has been observed for a long period of time, the total fluctuation will be found even greater. In a group of 76 unselected hypertensive patients whom I followed for one and one-half years, 56% at some time or other had a drop of their blood pressure to normal on resting[9]. It is thus possible to state paradoxically that one may have a normal blood pressure in essential hypertension. This variation of the blood pressure is true not only of the systolic, but also of the diastolic blood pressure. During the course of four to five hours' observation, the diastolic may vary as much as 50 mm. of Hg. When the diastolic drops, for instance, from 130 to 110, the drop of 20 mm. is 15% of the original 130 mm. Similarly, if the systolic drops from 250 to 210, the difference of 40 mm. is also only 15% of the total 250. Therefore, in the case of the diastolic, a variation of 20 mm. was a percentage variation of 15%, while in the systolic a variation of 40 mm. was also only a 15% variation. I have found in a group of 70 hypertensives, observed over a long period, that the diastolic blood pressure fluctuates as much by percentage as the systolic[13].

This variation of the blood pressure seems to be an exaggerated physiologic response to stimuli which, in the person with normal blood pressure, produce similar, though much less marked, variations. The drops in blood pressure already mentioned as occurring when the patient sits in a quiet room are simply the result of psychic and physical relaxation. All forms of relaxation in essential hypertension produce drops in blood pressure. Thus it has been demonstrated that during sleep the hypertensive patient's blood pressure drops to normal if he has not an advanced stage of the disease. Warm weather and, similarly, warm baths, by their relaxing and vasodilating effect, produce a drop in blood pressure[1]. The blood pressure is definitely lower in the morning, after a night's rest, than it is in the evening[12]. Consequently it often happens that a patient in the early stages of the disease may have a normal blood pressure in the morning and a pathologic one in the evening. All states of excitement, fear, surprise and anxiety produce elevations in blood pressure; in women it may be elevated just before their catamenia[14].

In practice, therefore, it will be a rare case of essential arteriolar hypertension that does not show some variability of its blood pressure under the different conditions enumerated. It would seem best that the physician record all the different readings obtained. A marked lability, and frequent approaches to normal suggest that the immediate prognosis is good, since it indicates that the arterioles are still capable of marked dilatation and constriction, which, in turn, probably indicates that the smooth muscles of the arterioles are not markedly damaged. However, the fact that a patient has a labile blood pressure does not remove the possibility of the occurrence of a cerebral hemorrhage, whenever the blood pressure becomes unusually elevated on excitement or from some other cause. The general knowledge of this phenomenon of lability will aid in the early diagnosis of essential hypertension; for, since the fluctuation is greater in the earlier stages of the disease, the physician will hesitate to dismiss as cases of emo-

tional hypertension patients who, on sufficient observation, will be found to have labile early essential hypertension. Because of all the above variabilities it is reasonable to state that the most important clinical characteristic of essential arteriolar hypertension is the instability or fluctuation of the blood pressure.

Thus far I have considered the early diagnosis chiefly by means of the sphygmomanometer or laboratory tests. I shall next consider the early symptomatic manifestations of this disease.

It is true that a large number of patients with essential arteriolar hypertension may complain of no symptoms. It is equally true that many patients develop symptoms after, and because of, the discovery of their disease. There is left the large group of patients who come to the office because of their symptoms, even before they have learned that their blood pressure is elevated. It is the nature of the symptoms in these patients that I will now discuss more fully.

The Nature of the Symptoms Associated With Early Essential Hypertension.—It is widely believed that all the symptoms in essential hypertension are caused by arteriolar sclerosis in some region of the body[15]. When a patient complains of shortness of breath on exertion, and on examination shows moderate dyspnea, marked left-sided cardiac enlargement, and a marked hypertension, it may be assumed that the hypertension has caused the cardiac enlargement and dilatation, which, in turn, have caused the dyspnea, and that such a patient at postmortem would show widespread sclerosis of his arterioles. In such a case, therefore, it would be true that the arteriolar sclerosis had caused the symptoms. On the other hand, there is a large group of hypertensive patients who complain intensely of many symptoms, and in whom there is no clinical evidence of arteriolar sclerosis. A few such patients have come to autopsy after accidental deaths, and in these no adequate explanation for the hypertension or for the symptoms has been found. Many of these patients often state that their symptoms began 20 to 30 years before, in their youth, certainly at a time when no sclerosis could have been present. As Dr. Joseph H. Pratt and I have demonstrated, such early symptoms associated with essential hypertension are due to vascular spasm secondary to emotional disturbances[16]. It is frequently possible to demonstrate the relation between the emotional disturbances and symptoms. Often it is impossible to find any relationship between emotional upsets and the appearance of symptoms, but rather that life as a whole is a large series of emotional traumata to such patients.

The conception that the symptoms associated with early hypertension are of psychic or vasomotor origin, and that the superimposed symptoms later in the disease are of arteriolar sclerotic origin, is illustrated in Figure 1. Here we see that, although the symptoms due to vascular spasm or psychic disturbances begin in early life, and may persist or reappear throughout life, the symptoms due to arteriolar sclerosis do not usually appear until middle or later life. It will also be seen, for example, that whereas headache and vertigo in early life may be due to vascular spasm, in later life they may also be due to cerebral arteriolar sclerosis. It is often difficult to differentiate clinically, in the individual case, the etiology of the headaches in advanced hypertensive patients.

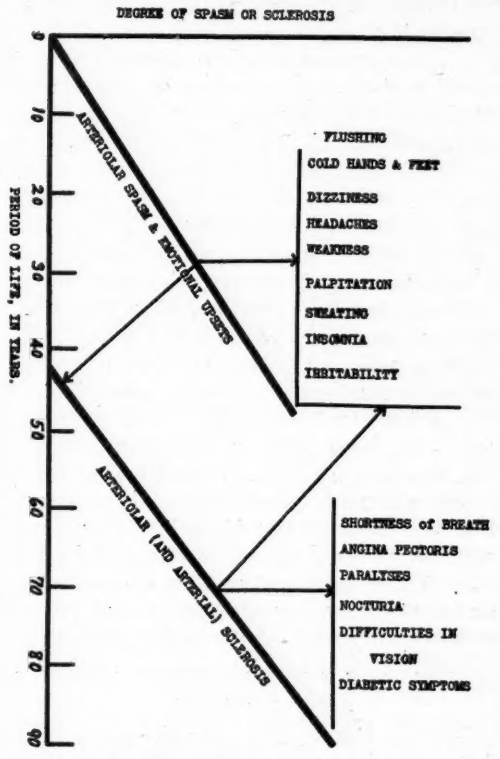

FIGURE 1. Schematic description of the nature of the symptoms associated with essential hypertension.

The Hypertensive Personality.—The vasomotor and emotional origin of the early symptoms in essential hypertension is closely related to the personality type. The special personality is an important clinical aid in the early diagnosis of arteriolar hypertension. This aspect of disease in general, and of essential hypertension in particular, is beginning to receive increasing mention and study. Moschcowitz[17] and others have observed that patients with hypertension are of a special psychic make-up. My own observations are practically in accord with those of Moschcowitz. I have found that hypertensive patients are dynamic individuals. Very prominent is hyperactivity, which expresses itself in various ways. Whether housewife or financier, such patients seem excessively meticulous in their work, and whatever their occupation is, they display their almost boundless energy in carrying it out. They seem to be under considerable tension, as shown by their tendency to

walk, talk, work and eat rapidly. It is interesting to watch the abnormal rapidity with which these patients walk into the examining room after their names are called in the waiting room. In official and personal relationships they tend to be loyal and sympathetic natures with a tremendous output of energy. Their words are usually expressed with vigor coupled with excessive enthusiasm or pessimism. They are often hypersensitive, quick-tempered, and easily irritated. Their serious attitude towards life, combined often with high ideals and excessive emotional responses, makes them the victims of brooding and worry. Often small matters preoccupy them and upset their sleep. The existence of this type of personality usually has been a lifelong matter in hypertensive patients, in contradistinction to many neurasthenic patients with normal blood pressure who may temporarily develop similar personality reactions. The recognition of such a personality in an individual with a mild variable type of hypertension suggests the possibility of early essential arteriolar hypertension rather than emotional hypertension. If there is, in addition, a family history of vascular disease, our suspicions are more fully strengthened. To be sure, there are many of this type who do not have hypertension, but the majority of people with essential hypertension are of this constitutional type, consisting of increased psychomotor and emotional responses to the usual incidents of everyday existence.

TREATMENT OF EARLY ESSENTIAL ARTERIOLAR HYPERTENSION

Modify the Personality. In the personality of the hypertensive patient lies the challenge for the treatment of early arteriolar hypertension. Every attempt should be made to modify the personality. The possibility of such an accomplishment is open to doubt. Although we certainly cannot change to any great extent the personality of a police dog to that of a lap dog, possibly in the human, however, with the aid of constantly applied reason and more easily acquired habits than canines, we may effect a certain change of personality reactions. We must strive to change a tense person to a happy-go-lucky individual. We must slow up the individual's pace from 40 to 20 miles per hour. Relaxation and play are the keynotes. If, for example, a young hypertensive person with a blood pressure of 160/98 is seated in a chair and simply asked to relax his body, at the end of 10 to 20 minutes we may still find his blood pressure at the same height; but, if we urge him to banish all unpleasant thoughts and to think of some calm, peaceful situation, it will usually be found that his blood pressure will drop considerably, even to normal. It is of no use to advise such patients to take a week's vacation, if they have unsolved difficulties on their minds to take with them. In other words, the necessity is as much for mental as for physical relaxation.

In order to secure relaxation, it is essential to inquire into every aspect of the entire program of such patients, and to plan in detail a mode of life. Moderation in food, exercise, work, sexual indulgence and recreation must be fully outlined. A midday rest period for an hour, whether at home or in the office, is desirable. At no time should there be occasion for rushing and hurrying. At least 8 to 9 hours of sleep should be had regularly. Week-ends should be spent in traditional Puritan manner, sleeping later in the morning and relaxing most of the day, instead of the modern exciting week-ends. Stimulants such as caffein, alcohol, and possibly nicotine should be avoided, or at least used in small amounts. Food of any type in moderate amounts is permissible, so long as body weight is kept within average normal limits, and sufficient roughage included to permit normal evacuation. There is no evidence for special limitation of salt, fluids, or protein in the diet. The excessive application of the energy and enthusiasm to playing games such as golf and tennis, or to watching football and baseball should be interdicted. Books such as "Intelligent Living"[18] will provide sensible attitudes towards life, and present things in their proper proportion. The speck of dust in the corner will then not appear so disastrous as it frequently does to many housewives. The selection of one of their nonchalant, carefree friends or neighbors as an example to emulate in detail is often a valuable suggestion. I have frequently found that such measures are sufficient to relieve many of the symptoms of these patients. However, it is only after years of applying the above changes that one may hope for a real change in their reactions, if not in their personalities.

By Drugs. It is possible to retard the patient's physical and mental activity by means of medication, thereby lowering blood pressure and also relieving symptoms. Unfortunately, available drugs either have only a temporary action or their continuous use produces undesirable effects. Of the many different kinds of drugs proposed, only the simple sedatives have stood the test of time and clinical experience. Many of the reported successes in the treatment of the symptoms of essential hypertension are due solely to the suggestion inherent in any seriously prescribed therapy given to hypertensive patients, many of whose symptoms are of psychic origin[19]. Among the best and least expensive sedatives are the bromides, phenobarbital and chloral hydrate. The use of these drugs in short courses, though goodly dosage, is valuable, especially at times when the patient is under unusual strain. In the past five years the value of the sulphocyanates has been widely heralded. These seem to act as sedatives when given in large doses or when given in small doses for very long periods. Unfortunately their real effect is obtained only by doses which produce

toxic effects. I have been unsuccessful in trying to secure the good results reported after the use of small doses[20]. It must be emphasized again that practically all past reports and studies of the effect of various drugs in this disease have been made in patients with fairly advanced clinical arteriolar changes. It is, therefore, unjustifiable to apply such conclusions to patients in the early stage of the disease, in whom it might be expected that the functional vascular constriction would be much more amenable to therapy than would later organic changes.

The use of vasodilators acting directly on the smooth muscles of the arterioles has, as yet, not been successful. The employment of amyl nitrite, sodium nitrite, and nitroglycerin is of no value because they have too brief an action and the patient develops a rapid tolerance for them. Recently the use of bismuth subnitrate has been advocated[21], but its value has not, as yet, been sufficiently demonstrated by well-controlled clinical observations and reports. In my own studies with bismuth subnitrate in fifteen hypertensive patients, I have not as yet observed any lowering effect on the blood pressure after three to six months of treatment.

Importance of Control Observations. It is impossible to complete a discussion of the treatment of early, as well as advanced, essential arteriolar hypertension without emphasizing the importance of control observations. Such controls are fully as important for the practicing physician as they are for the research clinician. No physician can clearly evaluate the effect of therapy in a case of hypertension unless he has a long period of frequent observations before and after the treatment[20, 22]. In a chronic disease the duration of which is often twenty years or more, a few weeks' or months' observation gives very little idea of the natural course and variations.

I can best illustrate some of the points that need to be controlled by a case example.

CASE REPORT

The patient (Figure 2) is a man 51 years old who has had hypertension for five years, and has had no symptoms in the past two years. From November, 1927 to November, 1928 his systolic pressure varied from 266 to 190, and his diastolic pressure from 150 to 90 mm. Hg. Since November, 1928 up to the present, the patient has been seen by me on 56 separate visits, and special attention has been paid to the variations in his blood pressure. At each visit the blood pressure was taken before, during and after 20 minute rest periods consisting of sitting in a quiet room. The total variation of each visit is plotted on the curve, the upper curves representing systolic variations, the lower curves diastolic variations. In December, 1928 (Period A) he was seen at weekly intervals, and was given a few drops of dilute hydrochloric acid daily, simply to create the impression that he was getting some treatment. During this period we see no change in blood pressure levels. This period was followed in January, 1929 (Period B) by the administration of 0.1 Gm. (1½ grains) of potassium sulphocyanate three times daily, which the patient took continuously for 42 days. During this period we see that the blood pressure levels are lower, and one might believe that the drug had a beneficial influence. This is far from being the truth. At the point *a*, a large fall in pressure occurred, but this was apparently the result of an attack of severe diarrhea due to improper food. This was borne out by the fact that despite continuation of the drug, the diarrhea stopped and the blood pressure rose again. Furthermore, after stopping the drug in February, 1929 the blood pressure did not rise further, which one would expect it to do after stopping the drug. I have demonstrated that the reason for this lower level during treatment was due simply to frequent observation during which the patient became more accustomed to the doctor[19, 20, 23]. This is seen by considering the curves during October, 1929 (Period D) and October, 1930 (Period F), during which months the patient was

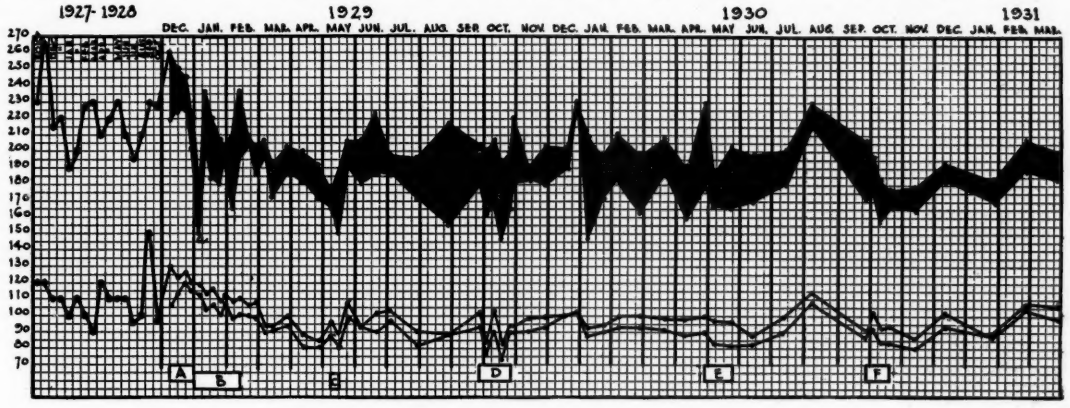

FIGURE 2. Blood pressure readings of W. A. from November, 1927 to March, 1931.

Upper black area shows systolic variations, and the two lower curves show the diastolic variations.

During Period A, a few drops of dilute hydrochloric acid were given daily.

During Period B, (0.1 gm.) t. i. d. of potassium sulphocyanate was given.

During Period C, (0.2 gm.) 4 t. d. of potassium sulphocyanate was prescribed.

During Periods D and E, red-tinged water was given.

During Period F, nothing was prescribed.

The patient is a male, 51 years old, who has marked narrowing of the retinal arterioles and slight cardiac enlargement by two meter orthodiagram. The renal function and electrocardiographic studies are normal.

seen at weekly intervals, but without treatment. During such periods the blood pressure levels were as low as they were when the patient was getting the small doses of thiocyanate.

SUMMARY AND CONCLUSIONS

1. Since essential hypertension seems to be hereditary, or at least familial, its early diagnosis is chiefly in the hands of the general practitioner because of his more intimate relations to the family. The fear of producing anxiety should not deter him from searching for the disease.

2. If elevations of more than 10 mm. from the average normal standards are regarded more seriously, the existence of early hypertension will be found more often, especially in young members of hypertensive families.

3. The natural lability of the blood pressure in essential hypertension, especially marked in the early stages, may mislead the physician into believing either that he is dealing with simple emotional hypertension, or that his treatment of a case has lowered the blood pressure.

4. The consideration of the hypertensive personality type and its discovery in suspected cases is an aid in the early diagnosis.

5. The widespread symptoms of vasomotor or emotional origin in the earlier stages should not be mistaken for those later in the disease due to arteriolar sclerosis. This conception of the early symptoms as of vasomotor or emotional origin permits more optimism in therapy.

6. Therapy should attempt a modification of the special dynamic hypertensive personality by reëducation and sedatives.

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END RESULTS IN THE OPERATIVE TREATMENT OF INGUINAL HERNIA

A Report of 150 Cases at the Lahey Clinic

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THERE are many recurrences following operations for inguinal hernia; in the literature the incidence varies from three per cent. to fifteen per cent., depending upon the type of hernia and the method of repair. A study of end results on those patients operated upon at the Lahey Clinic during the ten-year period, 1919 to 1929, has been undertaken. A total number of three hundred and ninety-four operations for inguinal hernia were performed. Of these, one hundred and fifty patients returned and were examined by the surgical staff. In addition, letters were obtained from 100 other patients, ninety-eight of whom stated that they had been cured, and two that there was a recurrence present. In the group of one hundred and fifty patients examined, there were thirteen recurrences found, although but three of them realized that a recurrence was present when they returned. This shows clearly the percentage of error that may be present in follow-up results, obtained by letters, in determining the anatomical results. For this reason, the group of one hundred is discarded in the following analysis, and only the group of one hundred and fifty that was examined is considered.

There were forty-four bilateral operations performed on these one hundred and fifty patients, making a total of one hundred and ninety-four operations, which, with the total of thirteen recurrences, gives an operative incidence of 6.7 per cent. and an incidence of 8.7 per cent. for

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the number of patients. Eight, or 18.1 per cent., of the forty-four patients upon whom bilateral operations were done, showed a recurrence. This high incidence of recurrence where bilateral operations have been performed is now better recognized. Galli has suggested that it may be due to errors in technique that are apt to occur because of the haste that the surgeon feels in attempting to do both sides within a reasonable period. This is particularly true of those cases where fascia from the thigh is used. An important factor which suggests itself to us is the increased tension which the suture material must bear in a bilateral operation, particularly in the presence of large sacs and relaxed muscles. The condition is, of course, aggravated in patients having postoperative distention. Infection may play a more important part in bilateral operations, since it is the customary practice to use the same instruments and the same sterile drapings for both sides. This large abdominal field, in addition to the extensive areas of skin exposed on the thigh, offers a greater opportunity for the introduction of infection. If but one side is done, the muscles of the unoperated side may compensate for the increased tension and take the strain off the suture line. From our experience with bilateral operations, and from a consideration of this high incidence of recurrence, that is to say 18.1 per cent., we believe that bilateral operations should be avoided except in occasional instances.

The type and size of the hernia, as well as the type of operation performed, are considered as most important causes determining recurrence. In this group of one hundred and ninety-four operations, one hundred and twenty-five had the Bassini type of repair, and there were seven recurrences, or 5.6 per cent. There were twenty operations of the Bassini type, using a strip of the external oblique aponeurosis after the method of MacArthur, and one recurrence was observed, or 5 per cent. In fifteen operations the usual catgut repair was employed, reinforced with preserved ox fascia, after the method of Koontz. There was one recurrence after this type of repair, or 6.6 per cent. In thirty-four operations the usual catgut repairs were made, reinforced by strips taken from the fascia lata, after the method of Galli. In this group there were four recurrences, or 11.7 per cent.

In this series there were one hundred and twenty-three indirect inguinal hernias, treated by all four methods of repair mentioned above. It is, of course, true that in few of these was the reinforcing fascia method used. Six, or 4.6 per cent., of these operations showed recurrence.

There were fifty-one direct inguinal hernias, most of which had a fascia type of repair. Four recurrences were observed, or 7.8 per cent. In six of the patients the type of hernia was not mentioned. Three of the recurrences were in combined direct and indirect hernias. All of these were treated by the usual method of converting the direct sac into an indirect one, removing all of the excess peritoneum. The size of the hernia and the condition of the muscles are very difficult to represent in this study of end results, and are not included. The number of infections that were present in the cured as well as the recurrent cases is not known.

These operations were performed by four different surgeons, and the type of repair employed has been the same. The incidence of recurrence has been about equal, so we feel that, in order to have better results in this group of cases, some change must be made in the type of operation employed.

It will be seen from a consideration of these figures that the highest percentage of recurrences was found in the cases repaired with fascia lata. We do not wish, in this paper, to go into the technique employed in carrying out this operation. The cause of two of these recurrences can be explained. One patient was seen a year following operation and found to have an excellent result. One month later, in an automobile accident, he was struck in the right groin by the edge of the car door. A swelling was noted immediately following, which increased steadily in size until a secondary operation was performed. This was a true example of the rare traumatic hernia. An error in operative technique accounted for the other recurrence, a small defect being found at the lower end of the repair soon after operation. The patient was re-operated upon within one month. Omitting these two cases in order to get a better idea of what we can expect from fascia lata repairs, we have an incidence of 5.3 per cent. Of course, an additional reason for the large per cent. of recurrences after the fascia repair is that this type of operation has been selected for the very large indirect hernias, with relaxed and poor musculature, for recurrent hernias, and for the direct ones. It has been a policy in the Clinic, for the past two years, to use the Bassini type of repair, reinforced by strips of fascia, after the method of Galli, in all but the exceptional cases of hernia repair. The type of operation employed in this Clinic was presented in the Surgical Clinics of North America by Mason[1] in 1929.

We believe that, as we come to consider the incidence of recurrence in our later cases, a considerably lower incidence of recurrence following adoption of this type of repair will be found.

In this series of one hundred and fifty patients there were sixteen females, with one recurrence. There were three patients under the age of fifteen, with no recurrences. The majority of the recurrences were in patients of the fifth decade or more, showing that age was an important factor in determining the soundness of healing and the incidence of recurrence.

In examining these patients, ten, or 6.7 per cent., showed some evidence of atrophy of the

testicle on the operated side. In none of the ten had a previous atrophy been noted before operation. Five of this group of ten were patients on whom a repair after the method of Galli was employed. This may be an objectionable feature of this method of repair, unless care is taken to leave an adequate opening for the passage of the cord without interference with its blood supply.

Among the group of thirty-four patients having fascia removed from the thigh, a large bulge of the thigh muscles through this defect occurred in two. This was not incapacitating in any way but was very noticeable when walking. When more than two strips were removed, we have rarely closed this defect. From these two cases we feel that it would be wise to suture the fascia lata when feasible, although there is sufficient experimental evidence to show that there will be a regrowth of thin fascia in this defect.

SUMMARY

1. The end results of one hundred and fifty patients at the Lahey Clinic operated upon for inguinal hernia have been reported. Attention is called to a high incidence of recurrence after the usual methods of repair.

2. There were one hundred and ninety-four operations and thirteen recurrences (6.7 per cent).

3. Forty-four bilateral operations were done with eight recurrences (18.1 per cent).

4. Thirty-four repairs reinforced by fascia lata showed four recurrences (11.7 per cent).

5. We believe that the bilateral operation should be discontinued if the percentage of recurrences is to be reduced.

6. We believe that the operative treatment of inguinal hernia should include the usual catgut repair, reinforced by strips taken from the fascia lata. We recommend closure of the defect in the fascia lata when possible.

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SPONTANEOUS RETROPERITONEAL HEMORRHAGE

BY F. WILLIAM MARLOW, JR., M.D.*

THE following case is presented with the realization that a definite diagnosis is not proven. The sequence of symptoms and physical findings, however, is so unusual that it seems justifiable to report it. A similar syndrome following trauma is not rare, but a spontaneous occurrence has not been frequently recorded.

T. F. O., a man 51 years of age, was first seen September 18, 1930, complaining of severe pain in his left side. His past history, family history and occupation were entirely negative except that he had had a ruptured appendix twenty years ago and a bulging scar in the right lower quadrant since that date. A year ago, he was told that he had very slight hypertension. There were no previous symptoms relating to the cardio-respiratory, gastro-intestinal or genito-urinary systems.

The present attack began with the sudden onset of a severe, griping, cramp-like, left upper quadrant pain, which came on while the patient was standing talking. The pain was at first in the mid flank, but afterward moved up under the ribs, well into the costovertebral angle. It radiated somewhat down to the groin. There was no urge to urinate. The pain came definitely in waves, was not related to respiration or exertion, and had not been relieved by the application of heat.

On physical examination the patient was found to be a well-nourished, well-developed man, in moderate pain. Pulse 96. Temperature 97°. Respirations 20. Blood pressure 190/120. Examination of the head and chest were entirely negative. The heart was moderately enlarged; left border of dulness 12 cm. to the left of the midsternal line. The sounds were slightly tick tack in quality. A_2 was loud and ringing. There was a blowing systolic murmur at the apex, but no diastolic murmur was heard. The abdomen was slightly distended and the patient did not relax well. There was moderate tenderness without any increased spasm in the left upper quadrant with definite costovertebral tenderness on the left; none on the right. There was no increase in peristaltic sounds. At that time the diagnosis rested between a pyelitis or kidney stone, a possible intestinal obstruction associated with his ruptured appendix, and an abdominal type of coronary occlusion. The patient was made comfortable in bed; the pain was controlled by codeine, and a warm enema was given. When seen early the following morning, the patient stated he had had no result from the enema and then reported that he had had no bowel movement for two days although they had previously been regular. The enema had not increased or relieved the pain. There were still no urinary symptoms. The pulse was 96, the blood pressure 170/96. Examination of the urine was negative except for a slightest possible trace of albumin. There was nothing in the sediment. The following day, after an enema, he passed large, hard, fecal masses, followed by softer material, with immediate relief of pain. When seen later, he felt fairly comfortable. Temperature 98°. Heart as above. Lungs clear. Abdomen negative. Blood pressure 180/110. The patient was advised to remain quietly at home for two days and then to return to work, making arrangements to have a barium enema examination. Four urine examinations had shown no evidence of kidney stone or pyelitis, although three of them had shown a slightest possible trace of albumin. A phenolphthalein test gave a 60% excretion of the dye.

Apparently this was an acute gastro-intestinal upset in a moderately hypertensive individual. The assumption seemed justifiable that a somewhat sluggish bowel had become slightly obstructed, perhaps due to an organic lesion.

Three days later, shortly after the noon meal, the patient had an exactly similar attack. He was taken

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to the Haymarket Relief Station, where he was thought to have a renal stone. However, the urine was negative and there was a suggestion of a left upper quadrant mass. He was transferred by ambulance to the Baker Memorial Hospital, where, on admission, his temperature was 98°, pulse 120, respirations 25. The patient was an ashy gray color and was sweating profusely. The heart was rapid, definitely tick tack in quality, but was otherwise unchanged from previous examinations. Blood pressure 170/110. Nothing remarkable could be made out in the abdomen, which was level, soft, tympanitic. There was no mass or spasm. There was indefinite tenderness in the left upper quadrant with moderate resistance on the whole left side. An enema gave a good result. White blood count was 25,000 with 80% hemoglobin. After a hypodermic injection of morphine grs. ¼, he felt fairly comfortable. At this time the possibility of a coronary occlusion or mesenteric thrombosis was considered most likely and expectant treatment seemed wise.

The following day, an electrocardiogram showed a normal sinoauricular tachycardia. Rate 120. Flat T_1. Diphasic T_2 T_3. A barium enema examination was entirely normal, with no evidence of obstruction. A plain film of the abdomen showed no evidence of kidney stone or abnormality in outline of the kidney. A seven foot plate of the heart showed definite enlargement with some tortuosity of the aorta. A surgical consultant felt that the possibility of mesenteric thrombosis was great, but did not wish to operate until more definite signs were manifest. The patient was passing large amounts of gas, but no fecal material except barium. The pain was much less severe but seemed definitely associated with intestinal gas. At this time the white blood count was 18,900, the red count was 3,420,000 and the hemoglobin had fallen to 60%. There was a polymorphonuclear leukocytosis of 82% and a negative urine. Admission stool showed no blood.

The following day the patient was very comfortable though passing large amounts of gas. The abdomen was softer, but definitely distended; there was very marked increase in peristalsis. It was more tympanitic in the upper left and right quadrants than in the left lower quadrant which seemed rather dull to percussion. There was no costovertebral tenderness. The heart was gradually slowing down to around 100, but the temperature had risen to slightly over 100°. With the rising temperature, gas, and increased peristalsis, a sub-acute obstruction, probably due to mesenteric thrombosis, was considered the correct diagnosis. That afternoon the temperature rose to 102°. Operation seemed inevitable,

URINALYSIS

Date	Color	Reaction	Sp. Gr.	Albumin	Sugar	Bile	W. B. C.	R. B. C.	Casts
9/19/30	CA	Ac	24	SPT	0	0	0	0	2–3 Hy
9/20	CA	Ac	28	SPT	0	0	0	Rare	2–3 Hy
9/22	CA	Ac	24	SPT	0	0	2–3	Rare	2–3 Hy
9/24	CA	Ac	40	VST	0	0	2	0	Hy Gr
9/24	CA	Ac	30	SPT	0	0	2	0	
10/3	CA	Ac	14	0	0	0	0	0	
10/3	CA	Ac	14	0	0	0	0	0	Rare Hy
11/17	CA	Ac	20	0	0	0	0	0	0

BLOOD STUDIES

Date	Corpuscle Count	Hemoglobin	Polymorphs	Large Lymphs	Small Lymphs	Large Mononuclears	Basophiles	Stained Smear
9/23/30	25T	80						
9/24	3.4M 19T	60	82		12	5	2	Normal except slight achromia
9/25	13T	55						
9/27	2.5M 9T	55	67	4	20	7	3	Some achromia and polychromatophilia
9/29	2.8M 12T	55						
11/17	5M 8T	80						

9/26/30	Negative stool exam.
9/27	Negative stool exam.
10/6	Negative stool exam.
9/24	Hinton: negative
9/24	N.P.N. 38 mgms./100 cc.
9/26	Clotting time 7 minutes Bleeding time 2 minutes
10/2	Icteric Index 8

but following the passage of hard, billiard ball like fecal masses, the patient became very much more comfortable. The next morning (the fourth day of the second attack) a large ecchymotic area, measuring 15 x 10 cms. appeared on the left flank on the lateral aspect of the trunk. His temperature had dropped and the patient was much improved.

Retrospection now made the patient's condition on admission perfectly compatible with an acute severe hemorrhage. The rapid pulse, profuse sweating, pallor and prostration, associated with a high white count, in the absence of external evidence of bleeding, had been interpreted as shock. Now, with the falling hemoglobin, the extreme pallor, and the striking signs of seepage of blood, an extensive internal hemorrhage became the obvious explanation. Operation was indefinitely postponed, and was never again considered, as improvement was constant from this time. The following day repeated red blood count was now down to 2,500,000 with a 55% hemoglobin. This was checked two days later at 2,790,000; still with a 55% hemoglobin.

The day of the appearance of the ecchymosis, râles were heard for the first time at the left base. In the succeeding days these became more extensive, with evidence of accumulation of a small amount of effusion. This never attained any serious proportions and was gradually absorbed without interference. The abdominal distention and pain were controlled by daily enemas and the severe gas pains at night by the use of a rectal tube. The hyperperistalsis persisted for several days, but no other intestinal symptoms developed. No blood was ever demonstrated in the stools or urine. The temperature gradually came down to normal and the patient complained only occasionally of dull pain in the left upper quadrant. After three weeks in the hospital and a normal temperature of almost two weeks, the patient was discharged to convalesce at his own home. At this time the red blood count had recovered to 3,300,000 with a 60% hemoglobin.

When seen four weeks later, November 14, 1930, the patient had nearly regained his previous health with the exception of slight easy fatigability. Physical examination was now practically normal. He had lost thirty-five pounds during the illness, but had remained constant since discharge from the hospital. The abdomen was entirely negative. There was no mass, spasm, or tenderness. The liver and spleen were not palpable. The blood pressure was 140/86. The heart sounds were essentially as when the patient was seen at the first examination. The urine was negative. The blood showed a 5,020,000 count, 80% hemoglobin, and a 10,000 white blood count.

Definite diagnosis in this case is not possible. However, the great similarity between its course and that of the case of "Intra-abdominal Apoplexy" reported by Greene and Powers[1] leaves little room for doubt. In all essential clinical criteria the case herein reported conforms not only with Greene and Powers' case but also with the four others collected by them from the literature. It differs, however, in that if the diagnosis be correct, it is the only case of recovery without operation. This is particularly interesting in that a similar syndrome following trauma has a somewhat better prognosis without surgical interference than with it.

1 Greene and Powers: Intra-abdominal apoplexy. Am. Surg. 93:1070, May 1931.

2 Bonthius, Andrew: Apoplexy of kidney bed. J. A. M. A. 96:523, February 14, 1931.

CONIZATION OF THE CERVIX UTERI WITH HIGH FREQUENCY CURRENT*

Use of the Cutting Current in the Treatment of Endocervicitis

BY BENEDICT F. BOLAND, M.D.†

ENDOCERVICITIS, the most common benign lesion of the uterine cervix, is present in acute stage during gonorrhea or pyogenic infections following delivery and abortion. The lesion involves cervical mucosa and glandular structure and may extend to the parametrium and adnexa. Various methods from local application to amputation of the cervix have been advocated and practiced, each striving to destroy or eradicate the diseased cervical mucous membrane and glandular structure and still preserve its musculature. Douches, tampons of different solutions, injection of the cervix with methylene blue and mercurochrome, local applications with iodine, argyrol, metaphen and pyridium in various strengths have all been transitory and limited. Cautery has been effective when other methods have failed. Modern advances in the high frequency current which possesses the cutting type (radio knife) afford a new method of approach in these cases. This method, conization of the cervix uteri, cores out the cervical canal which is inaccessible by other forms of treatment. The indications depend upon the local condition of the cervix and not the symptoms. In properly selected cases postponement of surgery, until healing and shrinkage has resulted, will lessen the severity and extent of operative work. The technique of its use in fifty cases on the Gynecological and Obstetrical Service of the Boston City Hospital and in private practice is herewith submitted.

Cervical trauma due to lacerations from childbirth dilatation and curettage stem pessaries are all factors that produce this infection. Payne states that leukorrhea is cervical in origin and is ascending in character in the nulliparous cervix and therefore the cervical canal generally bears the brunt of infection. In the lacerated type the cervical canal is everted and its mucosa subject to various bacteria producing hypertrophy and cervical erosions. The erosions

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are the result of infection stimulating the growth of cylindrical epithelium and replacing the stratified epithelium. The lesion may appear pre-cancerous because of the new glandular tissue. Its formation is productive of glandular occlusion and (Nabothian) retention cysts develop.

The instrument—a Hyams electrode—consists of a metal tube ten or twelve inches long and one-eighth of an inch in diameter, at the proximal end of which is a silicon tube one inch long. A fine tungsten is attached from the metal silicon junction to the distal end of the silicon tube and forms an arc one-eighth of an inch from the silicon tube. A hard rubber insulating sheath encircles the metal tube down to its silicon tube junction.

The instrument is operated from a Westinghouse Model F. Endotherm which is a high frequency apparatus designed to deliver three types of current (1) cutting, (2) coagulating, (3) desiccating. The type of current desired in conization is the cutting current of relatively high frequency, the oscillations of which are suitably damped for cutting action. Its cutting action is effected through a molecular disintegration which occurs in the path of contact between the electrode and tissue. A remarkably clean cut results with a very thin layer of coagulation and desiccation at the severed edges of the tissues. While this is not sufficient to interfere with primary union, it does have the important effect of tending to prevent bleeding and metastasis, as the small blood and lymph channels are sealed over. The depth of the cut is determined by the volume of current used, and as no mechanical pressure is necessary or desirable, trauma is avoided.

Anesthesia—Cocaine and 2% Nupercaine have been used by local applications as anesthesia in these cases. Cocaine 35% strength has been very satisfactory and produces adequate anesthesia to accomplish this procedure, when applied locally to the cervical canal for five minutes. Although no untoward effects resulted in the use of cocaine in this strength, the few first cases were treated rather cautiously because of the toxicity of this drug.

Nupercaine 2% Ciba, which is considered 10 times as anesthetic as cocaine and which can be used in dilute solution and which produces a more enduring anesthesia, has been used in the last ten cases. Nupercaine, "Ciba", is a quinoline derivative: a butyloxycinchonic acid diethyl-ethylene-diamide hydrochloride; differing in composition from cocaine and other commonly used local anesthetics. It has been used in Europe under the name percain and produces anesthesia for six to eight hours.

It occurs in the form of a white crystalline powder, is neutral in reaction, readily soluble in water, and may be repeatedly boiled. If the solution is rendered alkaline the drug precipitates a free base. Therefore, it must be used in a slightly acid solution and kept in alkaline free containers.

Uhlman, using Nupercaine subcutaneously in rabbits and guinea pigs, found it five times as toxic as cocaine. Lipschitz and Lantender found it twice as toxic as cocaine when used intravenously in rabbits and Gray reports similar results when used subcutaneously in dogs. Uhlman states that the greater the concentration the greater the toxicity. Although Nupercaine is ten times as anesthetic as cocaine when used in dilute solution, a more lasting anesthesia is obtained. Keyes and McLellan report its satisfactory use in 59 caudal, 46 spinal and several local and surface anesthesias.

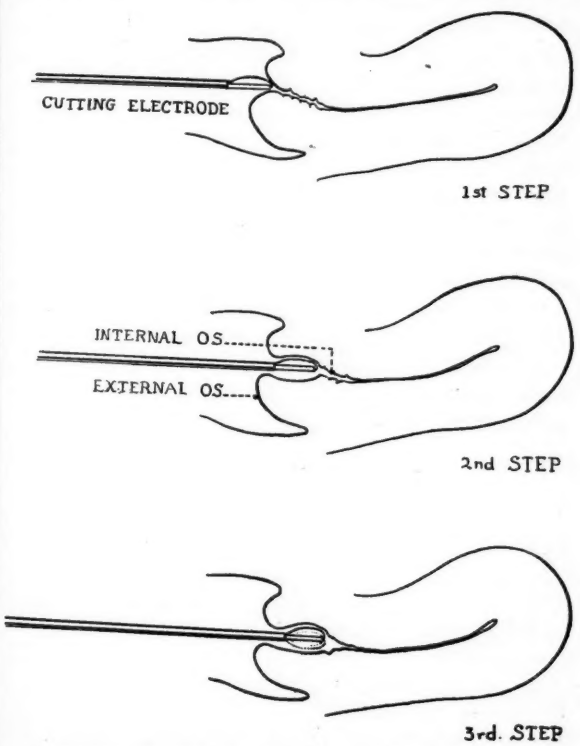

Illustration showing the beginning, coring and completion of conization procedure.

Its use in this small series has been as satisfactory as cocaine provided a wait of fifteen minutes was made to permit absorption. In two cases where an attempt was made to cauterize after ten minutes, pain was encountered and the procedure stopped. Following the insertion of another swab saturated with a 2% solution and the required period of fifteen minutes fulfilled, conization could be accomplished.

The patient is placed in lithotomy position with the legs well separated and draped in the usual manner. An illuminated vaginal speculum is inserted to expose the cervix. The vagina and cervix are wiped free of all discharge by swabbing with hydrogen peroxide, care being taken to rid the cervical canal of all discharge. A swab of 35% cocaine or 2% nupercaine is inserted into the cervical canal. An inactive wet metal electrode (6 x 6) is placed on the abdo-

men or beneath the patient's buttocks and connected to the high frequency machine by a conducting wire. The cervical canal is calibrated. The current is turned on and the switches set at No. 7 notch and also letter E in the word increase. The tip of the instrument is placed about 1/8 of an inch from the external os and the foot switch closed by means of foot pressure. A burning or searing of tissue occurs. The silicon portion of the instrument is passed into the cervical canal to the internal os and with a rotary motion the entire mucous membrane is cored out. The foot pressure should be kept closed until one complete circuit with the instrument has been made. The current is then disconnected by releasing the foot pressure, and the instrument is withdrawn. The mucous membrane, with its contained cervical glands, is found adherent to the tungsten wire and silicon tube. A few drops of blood may appear but this can be controlled by reapplication of the procedure. The entire procedure should take about one minute. An applicator with 4% mercurochrome is now placed in the cervical canal and the cervix swabbed with mercurochrome, after being certain that there is no bleeding. A mercuride suppository 4% is left in the vagina and a gauze strip inserted and removed by the patient the following morning.

AFTER TREATMENT

The patient is seen three days after the procedure and the cervix and canal swabbed with 4% mercurochrome. The patient is advised to insert a 4% mercuride suppository nightly. These suppositories, composed of a standardized water soluble hydroglyceride base with 4% mercurochrome, are manufactured by a pharmacal company of Boston and are a departure from the cocoa butter base which is commonly used. With cocoa butter the weight and size of the suppositories vary and the base, being of an oily nature, is not miscible with or soluble in vaginal secretions. It forms a repellent oily coating that insulates the vaginal membrane from the action of the mercurochrome. It lies on top of the membrane and forms crustations and does not penetrate into the crypts of the vagina.

The hydroglyceride base has all the advantages of a suppository, and acts as a soothing, and by virtue of the glycerine it contains, a depleting agent. The patient is advised to wear a vulva pad while asleep. Mercuride suppositories are effective in both specific and nonspecific infections.

The patient is then seen weekly and a grayish slough will be found filling the cervical canal which can be removed with dressing forceps. The cervix grows smaller and granulation tissue will be seen. The patient is advised against douches and intercourse lest she knock off some of the slough and produce bleeding. The cervix will reach normal size and be entirely healed in about four to eight weeks.

This series of cases have all had 10% copper sulphate applied to their cervices and two separate weekly smears performed before attempting this procedure, the copper sulphate to rule out cancerous condition and the smears for acute Neisserian infection. All these cases have been examined by another staff member and no case has had a retroversion or acute pelvic condition. This type of case is often neglected for the want of something better to attempt, and although in a limited field offers much to a patient when a result is secured.

CONCLUSIONS

The method is adapted to ambulatory patients, does not produce pain or discomfort, requires less than one minute to perform, removes the mucous membrane and glandular structure of the cervical canal with no danger of subsequent bleeding and with no menstrual disturbances, and the cervix does not have to be pulled down into the introitus. The cutting is accompanied by heat and assures asepsis, tissue may be removed to any desired depth, and the method can be used for removing tissue for biopsy when dilatation and trauma are inadvisable.

Chronic endocervicitis can be fully eradicated when this method is more universally adopted.

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TUBERCULIN SKIN SENSITIVITY IN 1000 ORTHOPEDIC CASES

BY GARRY DE N. HOUGH, JR.*

THE following observations were made on a series of one thousand consecutive von Pirquet tests carried out routinely on as many children suffering from orthopedic diseases, admitted to the Shriners' Hospital for Crippled Children, New England Unit, at Springfield, Mass. These children come from all parts of New England and eastern New York, are all under fourteen years of age, and are all economically underprivileged, since no children are accepted to this hospital whose parents are able to pay for treatment.

The test has been carried out with the usual intradermal technic, and both human and bovine tuberculin have been used in each test. We wish particularly to emphasize the difference in reaction to these two types of tuberculin. Downing and Higgins[1] have stated that in the early stages of the infection there is reaction only to the infecting type of organism, while later the patient reacts to either type. In the cases which they reported, approximately 15% would have been missed if only one type of tuberculin had been employed. In this series 6% would have given false negatives if only human tuberculin had been used, and 2% if only the bovine.

CLASSIFICATION OF CASES

The cases in this series are divided for convenience into three groups: (1) those clinically non-tuberculous; (2) those clinically tuberculous; and (3) those with proved tuberculosis. In the last group the lesion has been definitely shown to be tuberculosis either by bacteriological or histological examination.

In the first, or clinically non-tuberculous group are all children apparently free from tuberculosis as indicated by symptomatology, physical examination, and x-ray examination of the lungs. The orthopedic conditions for which they were admitted to the hospital were as follows:—

Infantile paralysis	39%
Congenital deformity	24%
Spastic paralysis	13%
Obstetrical paralysis	3%
Rachitic deformity	4%
Osteomyelitis	3%
Non-tuberculous arthritis	3%
Fractures and traumatic deformities	1%
Static, postural, and incidental	10%

The total number of cases in this group was 908. In 808 cases, or 89%, the von Pirquet test was negative. In 47 cases, or 5.2%, the result was positive to both human and bovine tuberculin. In 53 cases, or 5.8%, there was a negative response to one type, but positive to the other. In 40 cases, or 4.4%, the human gave a negative reaction while the bovine was positive. In 13 cases, or 1.4%, the bovine was negative and the human positive.

The second, or clinically tuberculous group, represents children in whom the diagnosis of some form of tuberculosis was made. In the great majority of the group the supposed tuberculosis was the condition for which the child was admitted and was chiefly tuberculosis of the spine, hip, and knee. A few others showed evidences of visceral or glandular tuberculosis as a complicating condition and are, therefore, included.

The total number of cases in this group is 77. In 8 cases, or 10.4%, of the group the von Pirquet test was negative. In 45 cases, or 58.5%, the reaction was positive with both types of tuberculin, while in the remaining 24 cases, or 31.2%, the reaction was positive to one type and negative to the other. In 18 cases, or 23.4%, the bovine was positive and the human was negative. In 6 cases, or 7.8%, the human was positive and the bovine negative.

The third group consists of 15 cases of tuberculosis, chiefly of the hip and knee, in which the clinical diagnosis was verified by finding the organism or characteristic microscopic pathology with the formation of tubercles in excised tissue. This represents 16.3% of the cases in which the clinical diagnosis was made. In these cases there was one negative skin reaction. No satisfactory explanation for this false negative could be found, the child being in fair condition and showing no evidence of an overwhelming infection. In 9 cases, or 60%, the von Pirquet reaction was positive to both types of tuberculin. In the remaining five cases, or 33.3%, the skin was sensitive to bovine but negative to human.

VARIATION IN SENSITIVITY TO HUMAN AND BOVINE TUBERCULIN

Considering the combined results of the three groups we find that of 1000 cases, 817 were negative to both types of tuberculin, while 101 were positive. In 63 cases only the bovine was positive, and in 19 only the human. Furthermore, in 29 of the cases with positive reactions there was a marked difference in the intensity of the response. In 17 cases the bovine reaction was more intense, while in 12 the human was more marked. In the clinically non-tuberculous the human was greater in 5 and the bovine in 2. In the clinically tuberculous the human was greater in 5, and the bovine in 12. In the proved tuberculous the human was more marked in 2, and the bovine in 3.

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No definite evidence could be found to substantiate the opinion of Downing and Higgins that the variation in skin sensitivity is characteristic of an early stage of infection, although this seems theoretically probable. A single case of skin sensitivity developing under observation is of interest in this connection. The case was that of a 9 year old boy with very mild symptoms in the right hip of several months' duration. There was very slight limitation of motion in the hip, and otherwise the physical examination was negative. The x-ray showed no definite pathology other than slight atrophy, and the blood picture, including the Wassermann reaction, was normal. The child was admitted to the hospital for study with a preliminary diagnosis of probable early tuberculosis. The von Pirquet reaction on admission was negative to both human and bovine tuberculin. One month later the test was repeated and while the bovine again produced no reaction, the human was slightly positive. After another month a third test was made and showed reaction to both types of tuberculin, the reaction to the human being stronger.

It is interesting to compare these figures with the results obtained by Dr. Chadwick[2] and his co-workers in their extensive study of tuberculosis in the school children of Massachusetts. They found an average incidence of 28% positive reactors in 42,071 children tested, gradually increasing from 20.8% at 5 years up to 34.6% at 15 years. Even if we include all reactors to both types of tuberculin, as well as children suffering from definite tuberculosis, the total incidence in our cases is only 18.3%, which is considerably below the average incidence for the state.

CONCLUSION

We would again emphasize the importance of using both human and bovine tuberculin in the von Pirquet reaction, as otherwise a very definite number of cases will be missed. Also, if we are justified in the assumption that the skin reaction is specific for the type of organism, and that the cases showing variation are representative of the whole group, then we may infer that in orthopedic tuberculosis the bovine type of infection is approximately three times as common as the human.

REFERENCES

1 Downing, H. F. and Higgins, H. L.: Am. J. Dis. Child. 31:178, 1926.
2 Chadwick, H. D. and Zacks, D.: New. Eng. J. Med. 200:332, Feb. 14, 1926.

NOTE ON THE EARLY HISTORY OF CONTRACEPTION IN AMERICA

BY NORMAN E. HIMES*

IN view of the recently increased interest in the history of medicine during the Colonial period, and in view of the growing interest in birth control and its history, it may be useful to call attention to an interesting passage on contraception in one of the earliest documents relating to American history. This occurs in *Bradford's History "Of Plimmoth Plantation,"* written during the years 1630-1650. Several editions of the original manuscript, now on deposit at the Massachusetts State Library, have been published, the most complete and readable, as well as the most beautiful from the standpoint of typography and illustration, being that issued in 1912 by the Houghton Mifflin Company.

The following passage (the background of which I have inserted in square brackets) contains probably the first mention in American literature of the prevention of conception:

> [Mr. Lyford, an Episcopal minister, was driven out of Ireland, and finally forced to migrate to America because of a scandal connected with his seduction of a young woman who had come to him to seek advice about marrying a certain young man. Lyford had not only seduced the young woman, but had used means to prevent conception. After the young woman married, the experience preyed upon her mind, and she finally confessed that . . .]
>
> Lyford had overcome her, and defiled her body before marriage, after he had commended him unto her for a husband, and she resolved to have him, when he came to her in that private way. The circumstances I forbear, for they would offend chast ears to hear them related, (for though he satisfied his lust on her, yet he indea[v]oured to hinder conception.)*

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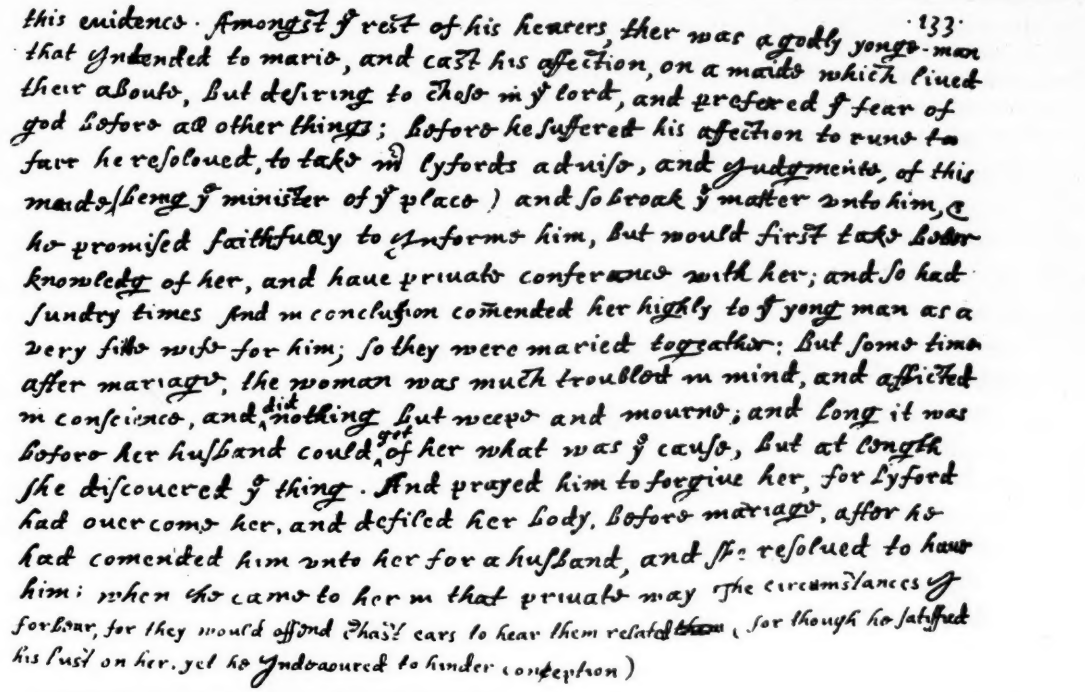
*Original MS. p. 133. This passage quoted from the Houghton Mifflin Co. edition (1912), i, 417. The passage appears in other editions as follows: Mass. Hist. Soc. (1856), p. 194. Commonwealth of Mass. ed. (Boston: Wright and Potter, 1898 and 1899), p. 235. Scribner's (1898 and 1908), p. 199. A facsimile of the MS. reproduced photographically was also published by the Houghton Mifflin Co. in 1895 with notes by John Andrew Doyle.



this euidence. Amongst ȳ rest of his heaurers, ther was a godly yonge man
that ỹntended to marie, and cast his affection on a maide which liued
their about, but desiring to chose in ȳ lord, and preferred ȳ fear of
god before all other things; before he suffered his affection to runne to
far he resolued to take m̃ lyfords aduise, and ỹ judgments of this
maide, (beeing ȳ minister of ȳ place) and so broak ȳ matter vnto him, ℮
he promised faithfully to ỹforme him, but would first take better
knowledg of her, and haue priuate conferance with her; and so had
sundry times, and in conclusion comended her highly to ȳ yong man as a
very fitte wife for him; so they were maried togeather: But some time
after mariage, the woman was much troubled in mind, and afflicted
in conscience, and did nothing but weepe and mourne; and long it was
before her husband could get of her what was ȳ cause, but at length
she discouered ȳ thing. And prayed him to forgiue her, for Lyford
had ouercome her, and defiled her body, before mariage, after he
had comended him vnto her for a husband, and she resolued to haue
him: when she came to her in that priuate way (the circumstances of
forbear, for they would offend chast eares to hear them related) (for though he satisfied
his lust on her, yet he ỹdeauoured to hinder conception)

One can only guess at the method employed. I am inclined to think it was *coitus interruptus*. (See Genesis, XXXVIII:9-10.) It may be observed that this is undoubtedly one of the oldest methods adopted by man to control reproduction. It has been found by anthropologists in use by primitive peoples who have had little or no contact with whites. Margaret Mead†, to cite one investigator, found it practised by the Samoans. It is more or less dispersed in Africa††. Anthropologists have inferred from this that it was in use by man before the beginning of written records—for instance, in the Stone Age.

This attempt at control is not strange in view of the fact that reproduction is so intimately connected with what Sumner and Keller call the "maintenance mores". Nor is it odd when one reflects that the ancient Egyptians had some empirical knowledge of contraception as early as 1850 B.C., as is shown by several medical papyri, among them the Kahun, Ebers and Berlin papyri††. Soranus¶ knew more about the subject than many modern physicians; and the Greek and Roman medical writers not only knew rational recipes (some tinged with magic), but considered contraception a legitimate phase of healing practice. It was probably taught as much as any other medical procedure. I am certain that contraception was as advanced in antiquity as most phases of medicine, and more so than some.

Nor will Bradford's reference seem unusual when one contemplates the array of procedures known to primitive tribes††. In the general region of Oceania (including Australia, New Zealand, Polynesia and the adjacent islands) contraceptive practices were especially prevalent. Some were drastic, involving mutilating operations; others were less severe. Not a few evince a considerable knowledge of anatomy, gained in some instances from cannibalistic habits; others are based on a crude knowledge of physiology. Some seem to have been practised with eugenic intent, an effort being made to eliminate the obviously defective strains—all of which is part of the evidence suggesting the need of qualification of the contention of demographers that quantitative population policy matured more rapidly than qualitative policy.

To return to Bradford's account: The event described took place in Ireland; but Bradford's mention is the earliest known in any American document. The next appears in the printed report of the traveler Ashe who, writing in 1808, noted that Indian girls of the Shawnee tribe, when they were accustomed to receive their lovers, drank

> the juice of a certain herb which prevents conception, and often renders them barren through life. They have recourse to this to avoid the shame of having a child—a circumstance in which alone the disgrace consists. . . . The crime is in discovery§.

It is certain that the potion was ineffective, for no drug has ever been discovered which, taken

†Letter to an American anthropologist. Miss Mead's published works make no mention of contraception among primitive peoples.

††For a full account of the history of conception control from the earliest to modern times see a forthcoming book on *The Medical Control of Fertility* by Robert L. Dickinson and Louise Stevens Bryant; in collaboration with Samuel R. Meaker, Cecil Voge [Edinburgh], Frederick J. Taussig, and Norman E. Himes. This volume is one of a series of monographs of the National Committee on Maternal Health. Probable date 1932.

¶See an article by the present writer, "Soranus on Birth Control", in this *Journal*.

§Thomas Ashe, *Travels in America* . . . p. 272.

by the mouth, will prevent pregnancy. Mention of it is here made merely as an early-recorded instance of contraceptive intent among the American Indians.

Another example is given by the noted anthropologist, Ales Hrdlicka, who has given us the following account of magical contraception among the Indians of the Southwestern United States and Northern Mexico. The passage is of interest, not simply for its representative magical nature, but for the reasoning of the Indian mother reported in the account.

> There is a very general belief among the Indians visited that sterility may be artificially induced. To produce this result the women desiring to have no more children take internally certain harmless substances, . . . which to the Indian are representative of sterility. The San Carlos Apache believe that artificial sterility can be induced, but the means is not generally known. It is supposed to be some variety of root. One of the women applied to the writer for a "medicine to make her have no more children". When questioned as to the propriety of such a proceeding, the answer was that when one child after another is born and dies, or when a number of children, one after another, are born dead, something should be done to end this unfortunate state of affairs.
>
> Among the White Mountain Apache a woman desiring to have no children, or to stop bearing, swallows now and then a little of the red burned earth from beneath the fire. This means, which is much believed in, is used mostly by the dissolute unmarried, but also by sickly or very poor married women. Some of the Huichol women drink a decoction of a certain plant to prevent childbearing. Cora women, for the same purpose, take internally the scrapings of the male deer horn.‖

These recipes were, of course, ineffective; but they, and those of the Egyptians, Greeks and Romans, demonstrate the antiquity of the desire for conception control. It may be remarked in passing that compared with other primitive peoples one finds a great dearth of accounts of contraception among the American Indians. In general all primitive peoples disdained sterility. They strongly believed in adequate reproduction; but, at the same time, the prevalence of the more usual population checks (abortion, infanticide, regulation by custom of the periods of intercourse, not to mention the "positive" checks) clearly show that families were almost universally small. Conception control was desired by primitive peoples; but it was a minor population check, for they seldom hit upon effective methods.

After the accounts of Bradford and Ashe, I know of no American reference to the prevention of conception until two accounts which really initiate the American birth control movement as a social movement. The first advocacy of birth control as a social and economic policy was made by Robert Dale Owen (1801-1877) in his *Moral Physiology**. The first American physician to pioneer in this field was a much respected Fellow of the Massachusetts Medical Society, Charles Knowlton (1800-1850), a freethinker, well-known at the time for his efforts to debunk the Thomsonian school of botanic medicine. His decent treatise bore the title, *The Fruits of Philosophy*¶ (New York, 1830; second edition, Boston, 1833). Only in the nineteenth century, as a consequence, in part, of the controversy started by Malthus, do we find anywhere in the literature, either European or American, any discussion of the broader social and economic aspects of contraception that have so much occupied attention in recent years. But with that literature I am not at present concerned.

‖Ales Hrdlicka, *Physiological and Medical Observations among the Indians of Southwestern United States and Northern Mexico.* Smithsonian Institution, Bureau of American Ethnology, Bull. 34. Washington, Gov. Pr. Off. 1908, p. 165.

**Moral Physiology, or, a plain and brief treatise on the population question.* New York, 1830. No first and second editions are known to be extant. There are a few copies of the third. See Norman E. Himes, "Robert Dale Owen, Pioneer of American Neo-Malthusianism." Am. J. Sociol., 35:529-547, January, 1930.

¶See "Charles Knowlton's Revolutionary Influence on the English Birth-Rate." *Cf.* also "Eugenic Thought in the American Birth Control Movement a Century Ago." Eugenics, 2:3-8, May, 1929.

BODILY COMFORT BASED ON AIR MOVEMENT

Factors determining indoors and outdoors the relation of personal comfort with heat or cold are first, the temperature of the air; second, the percentage of moisture in the air; third, the rate of air movement; fourth, the opportunity of the body to dispel or to acquire radiant energy perceived as heat; fifth, the clothing; and sixth, the bodily activity, according to an oral statement made to a representative of the *United States Daily* at the United States Public Health Service.

CANADIAN HOSPITAL RATES

Hospital rates in Canada are approximately 90 per cent. higher than the 1913 levels, and almost 5 per cent. higher than in 1926, a recently completed survey by the Dominion Bureau of Statistics shows, according to the *Modern Hospital.* Hospital rates, unlike commodity prices, have shown a steady advance. Between 1913 and 1926, maintenance costs advanced more rapidly than charges to patients, but since 1926 the reverse has been true.

The following table shows the average per capita, per diem charges and maintenance costs in the three years chosen by the bureau as a basis of comparison:

	1913	1926	1928
Private wards	$2.68	$5.07	$5.25
Semiprivate wards	1.57	2.32	2.85
Public wards	1.02	1.83	1.96
Operating room charges	5.16	8.17	8.36
Maintenance costs	1.68	3.48	3.45

MASSACHUSETTS MEDICO-LEGAL SOCIETY

SOME PSYCHIATRIC ASPECTS OF CRIME*

BY WINFRED OVERHOLSER, M.D.†

ALTHOUGH nearly every type of major crime may have its psychiatric aspects, it may safely be supposed that a group of medical examiners such as this is interested primarily in homicide. For this reason I shall confine my remarks this afternoon to homicide, and particularly that more or less intentional species which is legally denominated murder.

Murder is one of the most natural crimes, and it is indeed not impossible that it is the sort of crime which might, under certain circumstances, be committed by almost anyone. So many cases occur under the influence of extreme fear or anger that it is sometimes said that no murderer is in a normal state of mind at the moment of the crime. This is, of course, not the same as diagnosing every murderer as "insane"; such an interpretation would not only be stretching to undue limits the concept of mental disease but would also be contrary to experience and probably as well to public policy.

It is generally recognized that a certain number of murders are the direct outgrowth of mental disease, yet probably few realize what the figures on the subject show. During the fifteen years 1916 to 1930 inclusive, four hundred and ninety-seven persons were indicted in Massachusetts for murder in the first degree—an average of 33.1 per year. Of this number sixty-six were committed to mental hospitals, a few for observation, but the most as frankly psychotic, i.e., "insane". In other words, 13¼% of the homicides which a grand jury found to be presumptively first degree murders were committed by persons who were mentally deranged.

It should be pointed out in explanation of this large proportion that in no other state is there so great a likelihood that a mentally abnormal murderer will be recognized. This fact is due to the operation of the Briggs Law (now found as St. 1929, c. 105), which provides for mental examination by the Department of Mental Diseases of every person "indicted for a capital offense". An impartial examination of every such individual assures all parties that the psychotic and feebleminded will be identified. Contrast this with the practice elsewhere. If the defense attorney, or jail officer, or judge (none of them medically trained) thinks that he notes mental symptoms in the defendant, the latter will be examined, perhaps by some "expert" retained by the defense to aid in a specious plea; once the contention is raised, it may be combated by the prosecutor, and a battle of experts ensues; the issue is left to a jury of laymen, perhaps biased and certainly befuddled by the conflicting testimony; the result may be the acquittal of a non-psychotic person like Remus or the conviction of a psychotic one, such as was probably the case in the trial of Guiteau. A study recently made by the State of North Carolina showed effectively how the poor and friendless defendant, especially if a negro, is likely to be convicted despite gross mental defect or disease. Massachusetts may well boast that she seeks only justice for all, regardless of wealth or social station, seeing to it that the mentally deranged defendant is properly cared for, while at the same time no defendant profits by a false "plea of insanity".

Again it should be pointed out that the disposition of defendants found insane is simple and effective. The defendant may, at any time before sentence, be committed to a mental hospital by the court. If he recovers, he is returned to court; otherwise he is detained at the hospital. If he is acquitted of a homicide "by reason of insanity" the court must commit to a mental hospital for life, release coming only through executive clemency upon the recommendation of the Department of Mental Diseases. In any event, therefore, the community is protected.

A few recent cases serve to illustrate certain features of interest.

G. R. was a boy of twenty years who, in childhood, had had tuberculosis of the hip and had a very decided limp. He was inclined to be seclusive and spent much of his time in the woods trapping and building boats. Three weeks before the shooting of his father (for which he was indicted in October, 1925) his mother noticed that he was unusually moody and seclusive and he mentioned having an idea that the family doctor was poisoning the milk, a situation about which the prisoner would do something if it were not stopped. In other words, he showed very decided paranoid ideas at least three weeks before the fatal shooting. The family lived in a rather secluded part of town and nothing was done toward looking to a proper disposition of the boy's case. From the story which he told us after the shooting, it appeared that he had been brooding over his supposed persecution for fully three years. The culmination of his delusions was that he shot his father, who, to his mind, was one of the conspirators. When examined, he was obviously suffering from a psychosis. He was found not guilty by reason of insanity and committed for life to the Worcester State Hospital. In this case, of course, the neglect is attributable to the family, rather than to the authorities. Living, as they did, in a remote part of a small town, and the prisoner being naturally seclusive, it is not strange that this situation eluded the attention of the authorities. I might add that the shooting was preceded by a scene in which

*Presented before the Massachusetts Medico-Legal Society, Boston, Mass., February 4, 1931.

†Overholser—Assistant Commissioner of Mental Diseases, Commonwealth of Massachusetts. For record and address of author see "This Week's Issue", page 461.

the father and a deputy sheriff attempted to take a gun from the boy. It seems quite likely that this situation was improperly handled and that had it been dealt with by someone more familiar with mental disease, this fatality might well have been avoided. The District Attorney, at our suggestion, arranged to give this case a very early trial so that the defendant was not long kept in the jail after his reception there.

C. P. was an Italian, single, thirty years of age, who in May, 1926, shot and killed two police officers in Everett, who were attempting to arrest him for accosting a girl. It was quite obvious in the first examination that the man was definitely insane. In accordance with our usual custom, however, we made a careful study of his past history and found, much to our amazement, that it had been fairly generally known for at least six years previously that he was subject to mental disease. In 1919 he had been picked up by the Boston police while suffering from an acute psychotic episode, had been sent to the Haymarket Square Relief Station and released a few hours later with a diagnosis of "mental". His brother, who was much interested in him and with whom he had formerly been very friendly, took him to one or two doctors, who assured him that although the prisoner was deranged mentally, he was entirely harmless. From this time on, the defendant's attitude toward his brother changed entirely; some of his delusions were directed, apparently, against him. For instance, he would not even visit his brother to take a meal, although frequently invited. He stayed much by himself and was noted by his landlady to cry and sob. He was, however, able to continue at his work in the can factory. His fellow workmen realized that he was abnormal mentally, but were not particularly afraid of him. He developed many sexual ideas and was in the habit of accosting one girl in particular. This accosting was not especially uncivil; he would stand near where he knew she would pass, would tip his hat and say, "Good evening" and then follow behind her, making no attempt to prolong the conversation or to touch her in any way. This fact in itself should, of course, have suggested mental abnormality. The girl finally complained to the police in April, 1925, and the man was arrested, charged with loitering. Unfortunately, the police were not aware that the defendant's conduct should have suggested to them the presence of mental abnormality, nor probably was this particular conduct called to the attention of the court. In any event, instead of having a mental examination made, which would unquestionably, even at that time, have resulted in commitment, the defendant was released upon payment of a ten dollar fine. From this time on his delusions took added force, being directed now against the police, who, according to his perverted reasoning, were interfering with his desire to obtain a wife. He next developed the idea that the police were not only preventing him by arresting him and otherwise cautioning him against speaking to girls, but were actually urinating in his food and performing other disgusting practices. As a result of these ideas, it was but natural that when the police were called upon to prevent him from annoying the girl in question, he felt that they were attempting to kill him and that he shot them thinking he was acting in self-defense. The killing of these two officers thus seems to have been a clearly preventable act, an act which could have been avoided by the exercise of a certain amount of judgment and knowledge on the part of the authorities. Society seems to have fallen down very badly in this case, with the resulting tragic outcome. So well-defined were this man's delusions of persecution that he told us he had a list comprising the names of several other police officers, including the chief, whom he would have shot if he had had the chance. In fact, he thought that the court would probably release him and give him permission to carry out this desire. Perhaps we are fortunate that only two police officers were killed, since it is not at all improbable that had a good opportunity presented, he would have killed more. Another feature of this case is that the name of the charge filed against a defendant does not at all indicate how dangerous he may be to society. In this instance, the defendant had been convicted of one of the most insignificant misdemeanors, namely loitering, yet the manner in which the offense was committed should have suggested mental disease. In this instance the mental disease was of a paranoid nature, which rendered him even at the time of the 1925 offense a distinctly dangerous anti-social individual. He was as dangerous then as if he had been charged with murder.

C. S. was a young man, twenty-two years old, single, who in August, 1926, shot and killed his chum. The family history was distinctly bad, the father having had a feebleminded brother and also a sister who was both epileptic and feebleminded. The parents had separated seven years before and the prisoner had been left much to his own devices. For the two years prior to the shooting he had been practically a vagrant, having gone to the Pacific Coast, where he had been arrested and sentenced for vagrancy. He had also been for a time a seaman on ships and while being treated in a hospital for heart disease, in February, 1926, had been noted as very peculiar. He returned to his home three months before the shooting, did not work, drank to excess, and showed many marked symptoms of mental derangement. He had absurd delusions, particularly about his sexual organs, and had been seen by physicians, one of whom in June recommended that he be sent to a hospital for observation as to his mental condition. The father, however, did not pay any attention to this advice, and the prisoner was allowed to go on as formerly without any supervision. Finally he shot and killed his chum and was promptly apprehended. During the examination he talked incoherently but did not mention the fact that his chum, whom he shot, was one of those who had spread stories about him. He was actively hallucinated, his thinking processes were much disordered and, in short, he showed a considerable degree of mental dilapidation. He was found not guilty by reason of insanity and committed for life under Section 101. Here again we have a case of marked neglect on the part of the family. The physician recognized the condition and had urged the family to take steps, but nothing had been done. How remiss the police were in this case I am unable to say. I suspect that from the fact of this boy's living in a moderate-sized town and having been seen by several doctors there, some inkling must have come to the police that he was abnormal mentally. This, however, is wholly inferential and I am unable to verify my suspicions.

Now that we have said so much about the importance of mental disease as a cause of crime, the question may be well asked, What are we going to do about prevention? The two features which seem to stand out most prominently in the cases which I have cited are that, in the first place, the significance and potential danger of mental disease, particularly those types manifesting paranoid trends, were not recognized. In the second place, when mental disease was recognized, reluctance was shown, particularly on the part of the family, to send the individual to a hospital for mental diseases.

There is among the general public, and even among some of the educated members of the public, a curious survival of the medieval horror of the "asylum". People at large do not seem to realize that the asylum as described and generally known a hundred years ago does not exist today. In its place we have a mental hospital, an institution which is run on a high medical plane and which deals with the person committed thereto as one who is sick, this being of course the proper attitude to take. Families who would not hesitate to send their relatives to a general hospital for the treatment of typhoid fever, or pneumonia, look upon the state hospital for mental disease as the last resort, one to which no one should be sent until every other means had been exhausted and then only if the case appeared to be a hopeless one. Such an attitude results not only in murders, like those we have seen, but in suicides and in unnecessary burdens upon the family. Often, too, it has resulted in losing for the patient the only chance he might have had by early treatment. Massachusetts state hospitals are probably the best in the country and are so recognized generally throughout the United States and the rest of the world. We are very fortunate in this state in that commitment to a state hospital is a decidedly simple process. History has shown that where commitment is hedged about with many legal technicalities, particularly by a jury trial and formal hearing in court, the result has been that patients are sent only when their cases have become hopeless. Easy commitment means early treatment and early treatment means better chance for recovery, for by no means are all cases of mental disease hopeless. In fact, the majority are recoverable or show such marked improvement that they are safely returned to the community. We are particularly fortunate in this state to have a law known as the Temporary Care Law, which is found in Section 79, Chapter 123 General Laws. This permits not only any physician but any police officer, member of a board of health or selectman, to send to a state hospital any person needing immediate care and treatment because of mental derangement, other than delirium tremens or drunkenness. In other words, there is no excuse whatever for a police force detaining in a lock-up a person who is suffering from mental disease.

This informal commitment (for a period of not more than ten days) renders possible the immediate as well as the proper care of mentally ill persons who come to the attention of the police. Any physician may send a patient in the same way. The resistance to this action by a physician, of course, comes from the family, many of whose members still have the medieval notions of which I have previously spoken. Our state hospitals are located at readily accessible points throughout the state and their staffs are ready to give community service. Most of the hospitals conduct out-patient clinics, on stated dates, at various centers throughout the state. It is thus not always necessary to send patients to the out-patient department of the Psychopathic Hospital which, of course, was intended primarily for the residents of Boston and vicinity. It is possible, however, to get competent psychiatric advice readily and at no expense.

As regards the court, there is likewise little reason for dealing with a doubtful case without advice. Not only may the court, as provided under Section 100, Chapter 123 General Laws, commit for observation to a state hospital any person under complaint or indictment if his mental condition seems to call for it, but under Section 99, Chapter 123, the court may request the Department of Mental Diseases to assign a member of the medical staff of a state hospital to make such examinations as are deemed necessary, no fee being paid for these examinations. In other words, psychiatric advice is available to the courts as well as to the police and to the families of the mentally abnormal.

It is, of course, not true that every person suffering from mental disease is a potential murderer any more than it is true that every person who is mentally defective is necessarily a menace to the community. To distinguish, however, between the mentally ill who are and are not dangerous is a matter for experts, rather than for laymen. We need to get away from the notion that insanity is a matter for "common sense" rather than for medical training to pass upon. It is, essentially, a medical problem and should be dealt with as such. It is a problem which is fraught with significance not only to the afflicted individual and to the members of his immediate family, but to the community at large. Facilities are available, and if only these facilities will be called upon to render the service which they are ready and glad to furnish, the welfare of the individual and of society as a whole can be better protected than is now the case.

Discussion

Dr. E. K. Holt: In the performance of your official work as medical examiners you have frequently encountered cases involving mental diseases and abnormalities. It is of comparatively frequent occurrence that sudden or accidental deaths call you to a mental hospital. Your contact with at least certain phases of psychiatry causes me to doubt my ability to say anything that would add materially to your knowledge or understanding of the subject matter presented in Dr. Overholser's paper.

Last October, I had the good fortune to attend a meeting of the American Prison Association in Louisville, Kentucky, and on my return trip I stopped at a certain city in the Middle West. A murder had been committed, and the

contention had been raised that the accused man was insane. When the question of the prisoner's sanity reached the judge, he instructed the clerk of the court to take one of the constables and visit the prisoner in the jail and determine whether he was insane. This seems incredible in present-day jurisprudence. Yet, it is hardly more of a travesty on justice than the famous Remus case at Cincinnati, Ohio. In that case, no psychiatrist testified that Remus was insane, and several of them testified that he was sane. Yet a finding of "not guilty" was made by the jury, principally because Remus shouted and bellowed in the court room, and because the jury was sympathetic toward him. That whole case brought up another feature of court procedure that is interesting and somewhat perplexing. During the trial, Remus entered a defense of insanity, the District Attorney extended himself to prove that Remus was not insane at the time of the murder and had never been insane and was not insane at the time of the trial. After Remus had been acquitted on the ground of insanity, the District Attorney had to do a complete about-face, and seek admission to a state hospital for the criminal insane, as he felt that Remus should be detained in some institution. In the meantime, Mr. Remus and his counsel had also reversed their positions, and were contending that he should be released from the hospital as a sane man. In spite of the District Attorney's efforts in the second instance to prove what he had previously tried to disprove, the court found Remus sane, and ordered his release from the state hospital at Lima, Ohio. This brings up an important provision in the laws of Massachusetts governing the disposition of such cases acquitted on the ground of insanity. At the Medical Section of the American Prison Association meeting, state psychiatrists from Illinois and physicians from other western states discussed this very question, and were seeking information as to how these cases are handled in New York and Massachusetts. Under the Massachusetts law, a prisoner accused of murder and acquitted on the ground of insanity is committed to a state hospital for the remainder of his life. This provision safeguards the public interests, and discourages the offering of specious insanity pleas in such cases. The law does provide means for release from the institution under certain safeguards, but the release can only be made by a finding of the hospital that the patient is not suffering from any psychosis, no longer requires hospital care, and will not at any future time become a menace. In any case where the superintendent recommends the discharge of such a patient to the Department, an investigation of the case is made, the Commissioner's recommendation is transmitted to the Governor, and the release requires the consent of the Governor and Council after the Commissioner of the Department of Mental Diseases has found that the circumstances are such as to justify discharge. Sometimes, of course, a crime attracts a great deal of public interest, either because of the nature of the crime itself, or because of the prominence of the parties involved. This was the case in the famous Thaw trial, and in the trial of Loeb and Leopold, where the circumstances of the crime stirred up a great deal of public feeling, and the procedure of the trial was subject to a great deal of attention in the newspapers. This was true in the case of Guiteau, assassinator of President Garfield, where the feeling ran high solely because of the prominence of the party involved. It was contended by psychiatrists who examined Guiteau that he was very definitely an insane man, but this condition received small consideration, and Guiteau was executed for the murder.

In his paper, Dr. Overholser has emphasized the possibility of avoiding crimes in certain instances by a proper recognition of the existence of mental disorders. There are practical difficulties, of course, in attempting to carry out prevention in such cases. First of all, there is the question as to just who shall have authority for supervision of potentially criminal persons who have mild mental symptoms, not easily demonstrable, and who have not come in direct conflict with the law by any overt violation. There is a traditional resentment in this country against paternalism and against any procedure designed to inhibit the liberty and freedom of individual action. The legislatures are loath to enact laws to restrict these liberties, except in extreme instances, and for very definite causes, for the reason that abuses of authority are feared. Then, there is a very definite problem in determining just which of these milder abnormalities will result in criminal action. It is sometimes almost impossible to predict the behavior in individual cases, as shown by a case with which I had some personal contact several years ago, in Indiana.

A man, aged thirty-five, whose mother was insane, had been acting peculiarly for several weeks. He first began to dispose of livestock on his farm, saying that he would concentrate on goat farming. In the next few days, he bought almost two hundred goats. A little later he began to talk in an irrational manner, and one night came home threatening his wife. Instead of calling the police, she went to a friend's house. The next morning, her husband came over carrying a Bible under one arm and a shotgun under the other. In the front of the house, he put down both the Bible and the gun and then proceeded into the house, singing and talking in an irrational manner. There was no animosity between these families, and this man was laughing, talking and joking; he saw an old, rusty gun hanging on the wall, reached up,

took it down and pulled the trigger. The charge struck the neighbor, killing him instantly. This man was very clearly insane, and apparently had not the least realization of what he had done. He was sent to a state hospital, on trial was found "not guilty", and was committed to a hospital for the criminal insane. He was diagnosed as a manic depressive psychotic, and improved rapidly, but was held at the hospital for four years. Even then, he seemed quite normal during nearly all of this time. It was concluded that his condition justified his discharge, and his release was ordered. However, the day he was to leave the institution he assaulted two guards, injuring both, and again became maniacal. It was quite evident that, although this man recovered rapidly from his episodes, he was unsuitable to be at large, and should probably remain at the hospital the rest of his life.

In Massachusetts, in addition to the examination before trial, as mentioned by Dr. Overholser, provision is also made for the examination of certain inmates of county jails and houses of correction. These examinations are made by the Department of Mental Diseases, and at the present time a statistical study is under way covering the first five thousand cases examined since the Division was created in 1924. In some three per cent. of these cases a diagnosis of actual psychosis was made, and it seems clear that the additional cases showing psychopathic personality and mental deficiency are sufficient to show the necessity for or desirability of a study of this character among these so-called minor offenders.

DR. LANE: Dr. Jelly once remarked that after all, the diagnosis of insanity is made by the police officer. This is the trouble with the whole situation.

I was a medical student and attended lectures by Dr. Folsom, who told us the Government retained the majority of alienists on the Atlantic seaboard and refused to call them in the Guiteau trial. We are not allowed to express our opinion. We must answer such questions as are put to us.

I will cite the case of a young man who attempted to kill his wife and three children. He was known as a somnambulist. He was not tried but was sent to state prison for twenty years. I followed the case through his stay there and he never showed an instance, so far as they knew, of any somnambulistic acts while in the prison.

What are our hospitals for? To protect those who are not responsible. I think we ought to be practical. Those ought to be retained who need retention.

DR. LEARY: I have in mind a case of a man who went to a drugstore in Dorchester, followed the clerk into the back room, shot him, took a block of express money-order blanks, put a pistol to a taxi driver's back and told him to drive. The taxi driver drove him up to a policeman; he was arrested and taken to court. Investigation proved that he had been in prison in two states. This man had worked in the prison in one state on a shoe machine, and when he had mastered it, threw a monkey-wrench into the machine and quit. In the second state he worked on a typewriter, and after he had mastered the mechanism, threw the typewriter out of a window. He was badly spoiled by his mother and had never worked. My reaction to this case was that he was a man who did not like to work, would use a new machine until it ceased to amuse him, then forcibly discard it. And yet on the basis that he was not responsible, a second degree plea was accepted.

DR. OVERHOLSER: The Constitution states that every person accused of crime may summon witnesses in his own behalf. You cannot take away from any defendant the right to summon witnesses to testify in his behalf; this includes witnesses as to his mental state, which may be an element of the defense.

Occasionally the defendant obtains the permission of the court to retain experts. In most cases these men have been perfectly willing to make an examination jointly, and, having the same facts, usually the parties agree on the interpretation.

DR. CURRIER: I should like to ask Dr. Overholser's advice on a case of a woman I delivered at the Symmes Hospital in Arlington. She was 33 years old, had been married six years; this was her first pregnancy; she had been taken care of through the prenatal period, had a normal child and a perfectly normal convalescence. She went home on the seventeenth day and everything went along fairly well. She called frequently and asked what she should do about one thing and another. Six weeks after delivery, her mother, who had been staying with her, left. She left on a Saturday morning and when the husband came home at noon, he found his wife with the gas turned on. The mother and child eventually became well. She is at home now and I have talked with her; she was very remorseful and said she had suddenly become overwhelmed with her sense of inadequacy. She is taking care of the baby now, seems normal and not disoriented. I question whether she may not again attempt something of a similar nature and want to know what I can do to prevent it.

DR. OVERHOLSER: There is always a possibility that a patient who is depressed will do away with himself. The ideal thing in this instance would be to provide attendants who would keep her under supervision. That, I think, would be the solution of the problem.

SPEAKER FROM THE FLOOR: It seems to me that with the patients who do the greatest harm, the difficulty is in recognizing the mental condition before it is too late. We, ourselves, are not able to make a diagnosis when a case of mental depression is present.

I think Massachusetts took a very wise step when she passed a law requiring a physical examination of prisoners. As I think back on the homicidal cases, I see more mental cases than I did. I can think of at least a half dozen patients who were insane and were tried and convicted. I can think of one case of a man who murdered a friend with a hammer and put the body outside of the hut. He was undoubtedly insane and it was only as the case was being tried that I insisted that he was insane. He was confined to the Bridgewater State Hospital. This man, after staying in Bridgewater for a few years, was released and sent back to his home in Sweden.

The other phase of the question is one that I don't know how we can improve; that is, getting mental cases under cover. We medical examiners have plenty of cases which teach us the danger of allowing mental patients to remain at large.

The ordinary physician, if he does recommend to a family that the patient ought to be under observation, immediately meets with a great deal of opposition and frequently his advice is not carried out.

Many of these patients who commit crimes do so in an acute flare-up. Three days later, no one can determine what their mental condition is. That is part of the story, of course, which we will have to leave to the psychiatrist. What we need is coöperation.

DR. LANE: I examined Richeson, under special permit, without the presence of the jail physician. I talked with his counsel and made a report and I saw affidavits from six states. He often would wake up in a town and not know where he was. He could not remember his name. Then he found himself inadequate and he was in a mess. He was not insane. He killed one girl in order to marry another. He had been recognized as a psychopath. Then the tragedy happened. A curious thing came up. I interviewed him and asked him why he mutilated himself. He said he never did it. I said, "Who did it?" and he said, "My God, Doctor, I would like to know who did." I believe he did it in one of his periods of so-called amnesia.

DR. LEARY: When a man knows the difference between right and wrong, and when he carries through a rather complicated self-serving plan to success, in my opinion there should be no question about his responsibility. There should be a distinction made between the man who knows right from wrong, and the man who does not know what he is doing. In the last case cited I do not see how you can consider that individual mentally irresponsible.

DR. DOW: I decided some time ago that that man was suffering from hysteria and was not insane and he was held responsible for his act. I did not say that Clarence Richeson was insane.

NEEDLES FOR THE TREATMENT OF VARICOSE VEINS

BY FRANK K. DUTTON, M.D.*

AT the present time there is no doubt in any doctor's mind as to the efficacy and safety of the treatment of varicose veins by chemical obliteration. There is also no question, in the opinion of any doctor who has had any great experience with this method, that, in spite of all experience and carefulness, a chemical slough will, in a small percentage of cases, complicate the otherwise uneventful convalescence.

This slough may occur from injecting very thin saccules of veins directly under the skin; or it may result from a very acute chemical phlebitis which destroys the wall of the vein and ruptures into the surrounding tissue; or from injecting an already infected vein, with resulting phlebitis, cellulitis and slough. But it is quite positive that a large majority of sloughs occur from direct infiltration of the tissues by the operator. This direct infiltration is caused by the needle penetrating the posterior wall of the vein, or by the needle being slightly withdrawn from the vein after blood has been withdrawn. In spite of contrary opinions, I know that it is possible to obtain sloughs from any of the fluids now being used for injecting veins. A perfect solution would be one that we could inject promiscuously either into, or around, the vein without worrying about its sloughing effect; that solution, however, is still to be found. Obviously the prevention of sloughing must be attained by perfecting our personal judgment and technique, or else through some improvement in the instruments used.

In my attempts to find some way of lessening the danger of penetrating the opposite coats of the vein and to give more confidence in engaging the needle well up into the vein, above the entering wound, I have been using the following needle or needles. The principle is that of a trocar, but a needle is employed in place of the stylet. The instrument consists of two needles, the point of the outer one being ground off and carefully beveled. The inner needle fits snugly into the outer one, its short beveled point just protruding at the end. The needles are inserted

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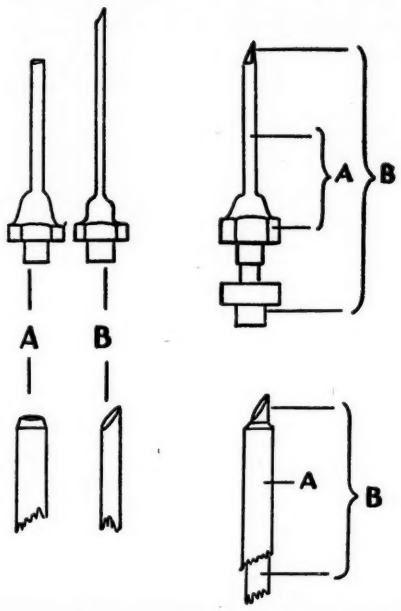
into the vein, blood is withdrawn by the syringe and then the inner needle is withdrawn, leaving the outer one in the vein. Another syringe is



attached to this needle, blood is again withdrawn, the needle is now pushed more boldly up the lumen of the vein, with more freedom and safety on account of its dull, squared-off point; blood is again withdrawn and the fluid then injected. These needles can be used in any size desired, depending on the viscosity of the fluid to be injected. For sodium chloride in dextrose, or dextrose alone, an approximate size of twenty gauge for the outside needle and twenty-four guage for the inner needle is desirable. For quinine and salicylate a twenty-two gauge outside needle and twenty-six gauge inner needle may be used. The needles should be long enough to allow ample length to insert the dull-pointed needle well up into the vein before injecting. Special needles, or various sizes with special fitting shanks, are being made which we hope will still further increase their efficiency.

The following benefits have been noted while using these needles:

1. Any amount of blood can be withdrawn from a blocked segment of vein, thus causing less dilution of the sclerosing fluid and increasing its efficiency.
2. A definite sense of security is felt, because of using a dulled needle and knowing that it can be inserted more boldly up the vein, away from the point of entrance.
3. There is no danger of injuring the posterior wall of the vein, at least while the injection is being made.
4. No leakage has been noted from the entrance wound, although the wound in both skin and vein may be slightly larger than that made by a single needle of the same size.
5. This outer needle, if it does slip out of the vein, gives a distinct "feel" to the operator and the injection can be immediately stopped.

These needles may be used for any intravenous therapy where there is danger of infiltrating tissues, such as salvarsan, 50% glucose, or for continuous intravenous saline or glucose.

INFLUENCE OF INOCULATED HUMAN SERUM UPON COMPATIBILITY TESTS*

BY H. EVERETT SMILEY, M.D.†

THE following report describes an interesting problem which arose in connection with routine cross-matching tests done prior to a proposed transfusion. The patient (No. 31440) a girl of seven years, was admitted to the hospital March 18, 1931, with the diagnosis of erysipelas of the leg. She was given convalescent erysipelas serum (Lot No. E-3) intramuscularly, the day of admission. The next day she was given another injection of the same kind of serum. On March 20, she received an injection of a different lot (No. E-4, which was comprised of pooled sera). On March 21 and on March 22, she received a stock erysipelas antitoxin (Lederle) and, on March 23, she was given a fourth injection of convalescent erysipelas serum (No. E-3). Two days later the patient was doing poorly and her blood (cells and serum) was sent to the laboratory, together with blood from three donors, to be tested for suitability for transfusion. The three donors, designated D1, D2, and D3, were her brother, father and mother.

On the first test the cells of all three donors and the recipient were strongly clumped by group II serum, and showed no clumping with group III serum. This result, of course, placed the recipient and the three donors in the same blood group, namely group III.

A cross-matching test was now made with the surprising result that the recipient's serum clumped the cells of each of the donors, and even moderately clumped her own cells. The recipient's cells were not clumped by the serum of either of the donors. In analyzing this anomaly, Dr. G. E. Robertson, the interne in charge of the case, suggested the possibility that the convalescent erysipelas serum that the child had received might have influenced the test. To determine whether this explanation was correct the following experiments were undertaken:

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I. The serum of lots E-3 and E-4 was typed. E-3 was placed in group III (definitely clumped the cells of a group II individual), while E-4 was placed in group II because it strongly clumped the cells of each of the three donors and the recipient, and it weakly clumped the cells of a group II individual.

II. Inasmuch as the child had received but one injection of E-4 serum (25 c.c.), the resulting dilution would naturally be high. An experiment was undertaken to determine in how high a dilution the serum E-4 would clump the cells from the different donors. It was found that the cells of all three donors and the recipient's cells were definitely clumped by the dilution of 1-40 in ten minutes; the cells of D1 and the recipient were definitely clumped in a dilution of 1-80.

From these experiments it seemed logical to suppose that the agglutinating factor in the recipient's serum was derived artificially from the convalescent serum (E-4) which had been given to the patient. To determine whether this was true, subsequent tests were made on March 31, and on April 6, using the same cell suspensions from the recipient and from the three donors as employed on March 25, but using freshly obtained serum from the recipient. On March 31 the cells from D2 and D3 were moderately clumped by the recipient's serum, while the cells from D1 and the recipient were not clumped. On April 6 there was no clumping with either of the cell suspensions. This experiment tends to indicate that the foreign convalescent erysipelas serum was the agglutinating factor, which was finally eliminated from the patient's blood.

CONCLUSION

The experiments cited above tend to show that human serum, when injected intramuscularly into a person of a different blood group, brings into that person's blood stream hemagglutinins which do not normally belong there, and which may cause confusion in compatibility tests.

MOSQUITO CONTROL

A large number of towns carry on anti-mosquito campaigns each season and employ gangs exclusively for mosquito eradication. In the Southern States the State Health Departments have taken the initiative in arousing the interest of the town officials and civic associations in the problem, says the United States Public Health Service, and the result has been the elimination from town suburbs or the control of many sources of the malaria-conveying mosquito.

"There are a few erroneous ideas relative to mosquitoes and their habits that should be corrected," says the Service. "It has too often been stated that mosquitoes originate in damp places, that they are wind-blown and that when bats are sufficiently numerous they control mosquito production. None of these statements is true. Mosquitoes that have originated elsewhere in water will collect in relatively damp, shaded places in the daytime, but such places are not places of origin. Some types of mosquitoes voluntarily travel long distances with light prevailing winds. With regard to bats, in areas where bats are decidedly numerous we find mosquitoes propagating close to the bat-roosting places and roosting in the bat shelters.

"It is often stated that gold fish are useful as a means of destroying mosquito larvae, but close observation has proved that they are unreliable and that minnows that feed habitually at the water surface are much more satisfactory for eliminating mosquito larvae.

"There are many communities that are pestered by numerous mosquitoes originating in water containers, back yards and a few local natural mosquito-breeding places that would be easy to drain; and it would be an easy matter for communities having a simple mosquito problem of this nature to obtain freedom from mosquitoes if a sufficient number of people would get together on the problem, as has already been done in many instances. Where the number of homes is relatively small and the mosquito-breeding areas are extensive, then it is often not practicable to undertake mosquito drainage operations, and we must rely on the screening of homes as a means of protection.

"In considering the question of mosquito elimination in any locality we should first determine what kind of mosquitoes are present and then the kind of places that those particular species come from. The next step is to make a survey or inspection to determine how many natural sources there are and what it will cost to drain them if such is practical, or to reduce their number and keep the other breeding places under control by means of treatment by oil or larvicides.

"When the problem is relatively important and extensive, sufficient public interest should be aroused to get anti-mosquito work started. It often happens that most of the annoying mosquitoes come from sources that have been considered of small importance and that the larger bodies of water, thought to be the main sources of mosquitoes, actually produce very few."—*The New York Times.*

MEDICAL PROGRESS

PROGRESS IN THE SURGERY OF THE SYMPATHETIC NERVOUS SYSTEM*

BY JAMES C. WHITE, M.D.†

SINCE the previous report of progress in knowledge of the sympathetic nervous system, which appeared in this *Journal*[1] a year ago, a very considerable advance has been made in all the branches of the subject. Besides animal research, much experimental work has been carried out by surgeons on human cases as the result of the new possibilities opened up by the diagnostic use of novocaine for temporarily blocking sympathetic nerves. Sympathetic denervation has been carried out on several new portions of the body, including the eye, brain, kidney, bladder, etc. Furthermore, numerous critical reports have been published which give the results of sympathectomy on large enough series of cases to permit fairly definite conclusions as to the practical value of these new methods. It is impossible for a review of this scope to take up in detail all the interesting articles which have appeared during the past year. An attempt only can be made to discuss the most important and practical studies. The interest being shown in this subject is reflected in the space devoted to it in the recent meeting of the British Medical Association at Winnipeg. A résumé of these papers has already appeared in a previous issue of this *Journal*[2].

I. Physiology

Probably the most fundamental physiological investigation which has been reported in the past year is the demonstration of a head ganglion of the sympathetic system by Beattie, Brow and Long[3]. They have shown that extrasystoles induced by chloroform anesthesia may be abolished by section of the hypothalamus in a plane between the colliculi and pituitary fossa. Stimulation here produces extrasystoles and experimental lesions in this region of the brain are followed by descending degeneration into the spinal cord. The sympathetic fibre tracts pass partly into the formatio reticularis of the brain stem and partly into the intermediolateral columns of grey matter of the spinal cord. According to Fulton[2] it is now clear that this part of the brain regulates the metabolism of fats and carbohydrates, the water balance of the body, rate of heart beat and probably also the action of the capillaries and sweat glands. This is the fulfillment of the prophecy made by Claude Bernard in 1878; that there must be a region of the central nervous system controlling the processes which adjust the reactions of the "milieu intérieur". A corollary to this theory of autonomic control by a brain center is found in the observations on changes in autonomic activity during sleep summarized by J. G. Mayo[4]. In sleep, whether normal or forced, there is a lowered output of urine, and all the glandular secretions of the body are greatly reduced. For this reason one of the first signs of sleepiness is rubbing of the eyes due to their dryness. The blood pressure and heart rate both fall, while the volume and surface temperature of the extremities are increased due to relaxation of vasomotor tone. Following the administration of anesthetics these changes may last for as long as a week, so that arthritics notice diminished sweating and increased warmth in their moist, cold extremities. Mayo records a case of hypertension with a blood pressure of 200/130 mm. in which the pressure always fell to normal values during sleep. He concludes that sleep, if forced, should accomplish a great deal for many patients who are suffering from hypertensive or exhausted nervous systems.

That there is also a certain degree of diurnal variation in the general activity of the sympathetic nervous system has been shown by Levy-Simpson[5]. By careful oscillometric and temperature observations in normal extremities taken throughout 24 hour periods, marked variations in circulation were noted at different hours of the day. Therefore, when a series of daily observations are planned, care should be taken to make the readings at the same time each day.

An observation of great neurological interest has been reported by Sir Charles Ballance[6]. In cats and a baboon he grafted the lower portion of the divided cervical sympathetic trunk to the distal cut end of the facial or hypoglossal nerves. He found that the peripheral sympathetic paralysis persisted, but that the nerves to the muscles of the face or tongue completely regenerated in 6 months. He took great care to rule out regeneration from the central end of the cerebrospinal nerve and felt quite certain that voluntary impulses were forced to travel from the brain over the sympathetic pathway into the terminal distribution of the regenerated nerve.

Another discovery of general medical interest has been reported by Altenburger and Kroll[7] from Foerster's Clinic in Breslau. By determining the sensory chronaxie of skin sensation to electrical stimuli, they have been able to measure quantitatively an increase of the sensory threshold after the administration of an

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inert drug and the suggestion that the patient would feel the stimulus less. The converse effect was also produced when the patient was told that he would feel the stimulus more intensely. Sensitivity can be increased or decreased as much as 300% by suggestion. Similar changes in visual acuity can also be produced[8]. Following extirpation of the regional sympathetic nerves these changes are reversed. Furthermore, the effect of certain drugs on skin sensibility is also reversed—i.e., calcium chloride, adrenalin, atropine and scopolamine, which ordinarily diminish skin sensation, increase it when sympathetic impulses are removed; whereas potassium chloride, choline and pilocarpine instead of increasing sensitivity become depressor in action. They conclude that the normal function of the sympathetic nerves, besides being able to conduct afferent pain impulses, is to dampen the sensitivity of the cerebrospinal system. The parasympathetic, on the other hand, intensifies the normal perception of pain.

The above papers deal with the physiology of the sympathetic as it affects the system as a whole. Numerous other papers having to do with regional physiology will be reviewed under the various topical headings below.

II. New Diagnostic Tests

In a paper entitled "Diagnostic Blocking of the Sympathetic Nerves to the Extremities with Procaine"[9] the author pointed out that this was a simple and safe test to determine (a) the quantitative increase in surface temperature that can be produced by operation; (b) the effect of sympathetic ganglionectomy on obscure pain which is suspected of being referred over the sympathetic nervous system. Novocaine block can be carried out by spinal subarachnoid injection in the case of the lower extremities, by injection of the mixed peripheral nerves, or by paravertebral infiltration of the sympathetic ganglia and their rami. The latter technic had already been utilized by Laewen and Von Gaza[1] in studying the pain pathways from the viscera, but they did not apply it to the extremities. We have found this method to be of great practical value, as it is much more accurate than the response to foreign protein injection in estimating the increase in circulation which can be produced by ganglionectomy. It also gives reliable evidence concerning the relief of pain in visceral and vascular disease which can be obtained in no other way. In a second article[10] are recorded the results in a series of 29 operations performed on the evidence secured by novocaine block. Enthusiastic articles advocating the use of spinal anesthesia for determining the vasodilator effect of sympathectomy have been written by Brill and Lawrence[11] and by Morton and Scott[12]. The later observers[13] have discovered that vasoconstrictor tone is also completely abolished under general anesthesia with nitrous oxide, ether, or tribomethyl alcohol (avertin).

III. Operative Methods

A. Periarterial Sympathectomy

Rogers and Hemingway[14] have reported some very illuminating investigations on the effect of periarterial sympathectomy in increasing circulation in animals. They tested heat elimination in a colorimeter and measured limb volume changes in a plethysmograph. Neither of these tests revealed more than a very transitory increase in blood flow. Direct observations of the arteries in rabbits' ears after sympathectomy of the carotid artery showed a dilatation which lasted only 48 hours. Blair, Duff and Bingham[15], by microdissection of the arteries in the human leg after periarterial sympathectomy, offer unimpeachable evidence that no long vasomotor fibres descend the peripheral arteries.

Demel[16] records 48 cases of periarterial sympathectomy followed by only 3 satisfactory results. He feels that the operation is unsound; that if the reported cases were followed longer there would be fewer enthusiastic reports, and that most of its benefit comes from making the patient feel that something is being done for him and in giving him good medical care.

Bernheim[17], who has had a very extensive experience with this operation, believes that, although it may give but little increase in peripheral blood flow in animals and only slight and transitory warming in human beings, yet it is a mistake to assume that the operation is not of clinical importance. He states that its chief value lies in the relief of pain. Fulton[2] has reached the same conclusion and quotes some very convincing clinical observations of Foerster[18].

It is undoubtedly true that there is a distinct reflex vasodilator effect which in man, where it is more pronounced than in animals, may last as long as 3 to 4 weeks. This is best brought out in the publications from Leriche's clinic. Leriche and Stricker[19] have given a very complete report of 12 cases of sympathectomy by periarterial stripping or arteriectomy in arteriosclerosis, Buerger's disease and trauma, with good results in all but two. They put forward the theory that an obliterated arterial trunk is a mass of irritated sympathetic nerve endings and gives rise to widespread vasoconstrictor reflexes. The reviewer was able to see most of these cases and was most impressed by the relief of pain.

Leriche and Fontaine[20] also report excellent results in two cases of x-ray burns with painful ulceration treated by periarterial sympathectomy of the brachial artery. In each case the operation brought about an immediate relief of pain and a vascularization of the previously inert granulations in the ulcer bed. The ulcers were then covered with pin-point grafts, which took and have remained healed for 1 year and 6 months, respectively. They summarize a series of 27 cases of similarly treated

x-ray burns gathered from the literature. Twelve of these cases have been completely successful, seven have been followed by relief of pain without healing of the ulcers, and eight have been failures.

In summing up this much debated subject I should say that in suitable cases periarterial sympathectomy is capable of giving a transitory increase in peripheral temperature and often a striking relief of pain. The rise in temperature, however, is not so great or much more lasting than that which can be induced by foreign protein shock. As for the relief of pain, in the lower extremity at least this can be accomplished more effectively by a new operation on the peripheral nerves which will be reported below.

B. Sympathetic Ganglionectomy

Royle[21], at the meeting of the British Medical Association, reported his series of 600 ganglionectomies with a mortality rate of only 0.5%. This operation can be counted on to produce a maximum vasodilatation in the legs after the excision of second to fourth lumbar ganglia. Since the adoption of Adson's technic of removing the upper dorsal ganglia, complete results are nearly always obtained in the arms as well. It is still a debated point whether the inferior cervical ganglion should be removed as well as the first and second dorsal. Adson[22] now feels that it should be, but admits that even then some vasomotor tone may persist in the arm. These cases are fortunately rare.

IV. Effects of Sympathectomy on Circulation

Horton and Craig[23], by injecting metallic mercury into the abdominal aorta of dogs after unilateral lumbar ganglionectomy, have given a graphic illustration of the degree of dilatation of the arterial [illegible] in the operated leg. These plates show clearly that there is a definite dilatation of the main arteries as well as of the arterioles. Applying this same method to periarterial sympathectomy, no demonstrable changes can be made out.

Stricker and Orban[24] have shown that in dogs ligation of the aorta at its bifurcation is followed by gangrene of the legs. If bilateral lumbar ganglionectomy is carried out, the dogs usually recover without gangrene. It would be well, therefore, to consider this procedure in cases where it is necessary to ligate one of the larger arteries when gangrene is a dreaded complication.

Brown[25] from direct microscopic observations reports that there is no vasodilatation of the capillaries. On the contrary, there is consistent narrowing of the dilated atonic loops which are found in cases of Raynaud's disease. The number of open capillaries in each square millimeter of skin and the rate of blood flow through them are both increased. In cases of thromboangiitis obliterans the capillaries are of normal tonus, but the circulation through them is very slow; following operation, no changes occur in their width, but the intermittent slow flow of cyanotic blood may be changed to one that is regular, rapid, and of normal color. The major effect of ganglionectomy is exerted on the arterioles.

A. Raynaud's Disease

Landis[26] has made some interesting microinjection studies of capillary blood pressure. Whereas the normal pressure ranges from 32 to 45 mm. of mercury, during Raynaud's crises it may drop as low as 5 mm. The slowness with which capillary pressure rises when venous congestion is applied by tourniquet during an attack, and the rapidity with which it falls, shows that the spasm is situated on the arterial rather than on the venous side of the capillary network.

Lewis and Landis[27] have made further observations which lead them to reiterate Lewis' contention that the attacks of syncope in Raynaud's disease are not due to abnormal vasomotor tone, but to increased local tone of the smooth muscle in the arterioles. They were able to observe spasm of the digital vessels on exposure to cold after removal of the inferior cervical as well as the 1st and 2nd dorsal ganglia.

These same writers feel that a similar mechanism is responsible for acrocyanosis[28], the cyanosis resulting from diminished blood flow and an increased blood content in the skin.

Simpson, Brown and Adson[29] have come to an exactly opposite conclusion. They feel that, in early uncomplicated cases of Raynaud's disease after complete interruption of nerve impulses either by novocaine injection or ganglionectomy, attacks of local syncope can no longer be induced in the denervated extremity. In carrying out this work they have used most of the tests devised by Lewis for producing vasospasm. The fact that attacks are brought on by psychic disturbances and are always accompanied by excessive sweating is further evidence of abnormal activity of the sympathetic nervous system. The authors point out that unless Lewis postulates an abnormality of the sweat glands, as well as of the digital arteries, his theory is not tenable. In advanced cases with chronic ulceration and fibrosis, there is no question that local changes in and around the arteries impair the results of sympathectomy.

B. Arthritis

Leriche and Fontaine[30] describe 19 cases of trauma to joints with resulting painful arthritis. Most of these cases showed no evidence of fracture, but pronounced pain and decalcification with pathological changes in the synovial membranes. These cases did not yield to the usual orthopedic measures, but were relieved by periarterial sympathectomy or ramisectomy. Pain

disappeared at once and there followed a rapid redeposition of calcium salts.

Rowntree, Adson and Hench[31] give the results of ganglionectomy in 17 cases of chronic "infectious" arthritis. These cases demonstrate that the procedure is applicable to both the upper and lower extremities and that the best results are obtained in the periarticular type of arthritis associated with neurocirculatory alterations. The operation relieves the excessive sweating and coldness and promises to be of permanent value. The best results are obtained in the hands and feet; in the elbows and knees they are less marked, and in the shoulder and hips little benefit is obtained. The presence of bony changes, particularly in the knees and hips, indicates a less hopeful outlook. However, even when ankylosis is completely or partially established, pain may be totally or greatly alleviated.

Flothow[32] has operated on a series of 5 cases of periarticular arthritis. He records that in every case there was immediate relief of pain which has been permanent. There has also been a progressive improvement in joint function. The author believes that besides the increased blood supply, the relief of pain and muscle spasm is an important factor in bringing about the favorable results.

C. Sympathectomy in Other Types of Vasospastic Conditions

Adson, O'Leary and Brown[33] point out that, in early cases of scleroderma secondary to vasospasm, much can be accomplished through increasing the peripheral circulation by ganglionectomy. Early cases, before much fibrosis and atrophy of the skin have set in, yield excellent results; even in the more advanced cases the ulcers heal, pain is greatly relieved with the cessation of vasomotor crises, and the advance of the disease is arrested. They have operated on 16 cases and noted up to 90% improvement in the most favorable group.

Among the articles appearing on thromboangiitis obliterans, there continue to be favorable reports of improvement produced by ganglionectomy. In this group it is all important to select those cases which have a considerable degree of vasospasm superimposed on the obliterative factor. Diagnostic novocaine block is of the greatest value in these cases and the accuracy of its predictions has been commented on by Morton and Scott[12] and by White[10].

Stern[34], by paravertebral injection of alcohol into the lowest thoracic and upper two lumbar segments in 3 cases of Buerger's disease, claims that he has been able to produce definite vasodilatation without any important paralysis of the motor nerves to the legs.

Excessive vasospasm may occur in cases of ulceration from varicose veins. Such ulcers are unusually difficult to heal. Craig[35] reports a case where all other measures failed and where eventually ganglionectomy was resorted to and gave an excellent result*.

V. Effects of Sympathectomy on Pain

Discussion concerning the importance of the sympathetic nervous system in the conduction of afferent painful impulses from the viscera continues to be intense. The old idea that the sympathetic was purely an efferent system concerned with the motor functions of the internal organs is gradually yielding to a recognition of its importance in the transmission of visceral pain. Experimental work on animals and human beings has shown that all the viscera have sensation, provided an adequate stimulus is applied. Livingston[36] has furnished an excellent summary of this work. Spiegel[37] who has been one of the most active experimenters in this field during the past years, has summarized his work as follows:—pain from the subdiaphragmatic viscera reaches the spinal cord over the white communicant rami below the 5th thoracic segment, from the thoracic organs over the remaining segments below the 8th cervical. He believes that all visceral afferent pathways enter the cord over the posterior roots. Lehman (quoted by Davis and Pollock)[18] and Foerster have reached the conclusion that some pain fibres must traverse anterior roots as well, because cutting the posterior roots alone has often failed to relieve vascular pain in the extremities, gastric crises, and other painful conditions. Davis and Pollock[38] believe that all the failures of posterior rhizotomy can be accounted for on the basis of nerve overlap. In their experiments on decerebrate cats, all sensation from the extremities and from the splanchnic system was lost when sufficient posterior roots had been cut. They conclude that no antidromic sensory fibres exist in the anterior roots.

A. *Cardiac Pain.*

Sutton and Lueth[39] have succeeded in producing cardiac pain in dogs by passing a thread beneath the anterior descending branch of the left coronary artery and bringing it out through the chest wall in a glass tube. Traction on the thread then causes constriction of the artery and evidence of pain is shown by altered respiratory rate, salivation and distinct signs of discomfort on the part of the animal. When the periarterial nerves are interrupted proximally, no pain is produced. Cardiac pain can also be elicited by manipulating a small glass rod down the right carotid artery into one of the coronary orifices. No pain occurs on traction on the cardiac muscle or pericardium. They conclude that cardiac pain is transmitted along the periarterial cor-

*A point not emphasized by Craig, but of vital importance, is the need of prolonged sterilization of such an ulcer and the making sure by numerous cultures that no streptococci are present. As the lymphatics from the legs lie alongside the lumbar ganglia, a neglect of this point may cause a fatality from streptococcus septicemia.

onary nerves and that it is caused by ischemia of the myocardium.

Alexander, Macleod and Barker[40] were able to make direct observations on the human heart in a case with open drainage for pericarditis. They found the ventricles to be insensitive to light touch, temperature changes, and vibrations. The anterior pericardium and diaphragm were sensitive to pressure and pinching, pricking or scratching.

Kuntz and Morehouse[41] by dissection and microscopic sections have shown important cardiac nerves running from the second, third, fourth and fifth thoracic ganglia to the heart. This confirms the observations of Jonnesco and Enarchesco and of Braeucker which were reported in the last year's review[1]. These grey rami carry both pain and motor fibres. According to the old ideas of cardiac innervation, the lowest fibres to the heart were supposed to run from the stellate ganglion via the inferior cardiac nerve. Operations for the relief of angina pectoris, based on this incorrect premise, frequently failed. The newer type of surgical attack of Mandl and Swetlow[42] against these upper dorsal ganglia and rami has been much more successful. The only objection to paravertebral alcohol injection lies in its technical difficulty. After successful injection of these structures anginal pain disappears. White[43] has reported operative excision of the upper left dorsal ganglia by the thoracic route. Attacks of angina pectoris disappeared in each case on the left side, although in one patient who died on the 12th postoperative day and in a second who died 9 months later, coronary occlusion caused intense pain on the unoperated right side.

I believe that this justifies the conclusion that the pain of angina pectoris can be completely relieved by blocking the upper dorsal sympathetic ganglia or their rami. This can be done by ganglionectomy, but on account of the severity of the operation, the mortality must be relatively high. The statistics of paravertebral alcohol block have shown it to be a very safe method, but on account of its technical difficulties, about one case in four has been unsuccessful.

B. *Pain from the Abdominal Viscera.*

Hess[44] records 10 cases of renal pain caused by kinked ureters, small nephroses, and movable or ptosed kidneys which were relieved by stripping and teasing away all the nerves from the renal pelvis and the vascular pedicle and wiping them back to the vena cava or the aorta. In six of the ten cases there was complete relief and nephrectomy in all was avoided. Following the operation, distention of the renal pelvis during pyelography was no longer painful; nausea and vomiting were eliminated.

Resection of the presacral plexus of nerves of intractable pain in the bladder is recommended by Learmonth[45] and numerous favorable case reports of this operation for painful utero-ovarian conditions have been published by Petersen[46] and by Michon and Haour[47].

C. *Pain from the Extremities.*

Atypical Neuralgias of the Head.

Flothow[32] reports the relief of two cases by stellate ganglionectomy—one of extremely severe attacks of pain in the right side of the face following fracture of the nose, the other of recurrent attacks of trigeminal neuralgia following section of the 5th cranial nerve root. The importance of using the posterior approach in order to remove the entire cervicodorsal and second dorsal ganglia is emphasized in this paper, as any partial removal will fail to interrupt all the sympathetic pathways to the head.

Spurling[48], Flothow[32] and White[10] all report cases of amputation stump neuralgia cured by ganglionectomy. In the case reported by the writer it was possible to show by novocaine block that the surgical attack should be made on the sympathetic rather than on the cerebrospinal nerves. Pieri[49] has used the same operation with success on three cases of ascending neuritis in the limbs accompanied by circulatory and trophic disturbances. Similar striking effects on the pain in arthritis have been mentioned above.

A very effective method for relieving the pain of vascular occlusion in the legs has been described by Smithwick and White[50]. This consists in the exposure of the sensory and mixed nerves through small incisions in the lower leg below the origin of the important motor branches to the muscles of the calf. The nerves are blocked by injection with small quantities of alcohol or by crushing with a hemostat. Incisions at this level usually heal readily. The complete freedom from pain, the ability to do postural exercises and to tolerate minor surgical procedures have been of the greatest value in treating these cases. When the peripheral nerves are blocked, the sympathetic fibres running in them are also interrupted. As a result of this, sweating ceases and the blood supply of the desensitized area of the foot is increased as much as if a lumbar ganglionectomy had been performed. These effects last from three to six months. Further experience with this method has shown that no more than 1 c.c. of alcohol should be injected into the posterior tibial nerve and that simple crushing in a hemostat works best in the others. It is most important that the nerves should regenerate within six months, because if permanent paralysis results trophic ulcers are likely to occur.

VI. Sympathectomy in Spastic Conditions

In summarizing the present state of our knowledge on the influence of the sympathetic nerves in spastic conditions, Fulton[2] says:—"One is forced to conclude that the sympathetic is not essential for the maintenance of normal

reflex posture or the exaggerated postures of spastic paralysis, and that any influence which it may appear to exert is purely secondary. Whether this secondary influence is of sufficient magnitude to justify surgical ramisection in cases of spastic paralysis is still an open question. Though it is difficult to find clear-cut physiological justification for this procedure and although many case reports are unconvincing, one cannot overlook certain of the evidence of reliable clinical observers who claim that ramisection has caused in certain spastic cases permanent and beneficial diminution in rigidity."

Royle, who has performed this operation in 127 cases[21], remains an ardent enthusiast. On the other hand, Symonds et al[51], a group of English surgeons who have followed up the cases operated by Royle in England, conclude:—

(1) "The operation of ramisection as performed by Mr. Royle is without effect upon the rigidity of extrapyramidal tract disease."

(2) "Cases of hemiplegia and quadriplegia in children may be temporarily benefited. The diminution of tone and improvement of function, however, are short lived."

(3) "The operation, therefore, appears to have no place of value in the treatment of spastic weakness."

Finally, Herz[52], who in Australia has seen 33 of Royle and Hunter's cases of ramisectomy for various spastic conditions, states that there was no change in spasticity, athetosis remained marked, the muscles stiff, contractures unchanged and reflexes hyperactive. He concludes with the remark, "Das Resultate der Eingriffe war in allen Fällen durchweig gleich null."

In spite of these straightforward and discouraging statements, the writer feels that it is not yet time for a final judgment on this much debated topic. Dr. Royle is one of the pioneers in the surgery of the sympathetic nervous system and has developed the operation for the cure of Raynaud's disease, megacolon and other conditions where it is now thoroughly established. He has probably performed more sympathectomies than any other surgeon and it is extremely unlikely that his enthusiasm should have influenced his judgment to any great extent. Children who are badly crippled by spastic paralysis are so pitiable that any operation which is known to increase the sluggish circulation of their atrophied limbs and which has a mortality, in Dr. Royle's hands, as low as 0.5% is surely justified, if it produces even a slight increase in motor function.

VII. Autonomic Nerve Control of Visceral Activity

The researches of Walton, Moore and Graham[53] have shown that the mechanism of vomiting in peritoneal inflammation is due to afferent stimuli carried by the autonomic nervous system rather than to the effect of a toxin carried by the blood stream to the vomiting center in the brain. Despite the existence of a fatal peritonitis, vomiting was averted in animals whenever the nervous pathways were severed by vagotomy and sympathectomy, although the phrenic and other cerebrospinal nerve paths were left intact. Since by sympathectomy alone or vagotomy alone, vomiting in peritonitis is not abolished, the afferent emetic impulse traverses the two paths with equal facility.

In a series of experiments on dogs, Hillyard[54] has shown that the output of bile by the liver is entirely uninfluenced by nerve control. He tested the outflow of bile from biliary fistulas after test meals and found that protein and fat caused a much greater flow of bile than carbohydrate. After complete denervation of the liver the responses remained exactly the same; the secretory stimulus, therefore, must be borne by the blood stream.

On the other hand, in the case of the kidney, denervation causes a greatly augmented, constant flow of dilute urine. The results of a number of independent investigations are in accord on this point and have been summarized by Hess[44].

A most important advance has been made during the past year in our knowledge of the nerve supply of the bladder and rectum. Learmonth and Markowitz[55], by recording pressures in the descending colon and internal anal sphincter, have shown that sympathetic stimulation inhibits muscle tone in the bowel and causes contraction of the sphincter. The converse reaction takes place when the sacral autonomic fibres are stimulated. Learmonth[56] has also shown that the same mechanism controls the tone of the bladder and its involuntary sphincter. It is therefore obvious that the thoracicolumbar outflow of the autonomic system inhibits defecation and urination, while the fibres coming from the 2nd, 3rd, and 4th sacral nerves favor the emptying of the rectum and bladder.

The good results of lumbar ganglionectomy on neurogenic cases of Hirschsprung's disease have been known for several years. Rankin and Learmonth[57] have simplified the operation by recommending removal of only the aortic plexus of nerves from just above the inferior mesenteric artery to a point below the bifurcation of the aorta. This leaves the vasomotor supply to the legs intact.

Learmonth and Braasch[56], by resecting the presacral nerves at the bifurcation of the aorta, have been able to relieve urinary retention in a case of tabetic bladder and in another following disease in the lumbar spine.

Morton and Scott[58] have utilized the spinal anesthesia test to determine the type of case with megacolon that will react well to sympathectomy. A barium enema is given and, after a preliminary x-ray plate, the patient attempts to empty his lower bowel. Very little of the barium is ordinarily expelled. Another plate

is taken and spinal novocaine block performed. In the favorable case, after paralysis of the inhibiting sympathetic fibres arising from the lower dorsal and upper lumbar segments, the patient is able to expel the greater part of the enema*.

*It should also be possible in this way to select the cases of spastic bladder which are suitable for sympathectomy.

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CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 17351

HEMOPTYSIS AT SIXTY-TWO

MEDICAL DEPARTMENT

PRESENTATION OF CASE

DR. CHARLES A. NOBLE*: This case is that of a sixty-two year old married expressman who entered the hospital complaining of cough of six months' duration and hemoptysis of two weeks' duration.

Two years prior to admission he had marked dyspnea on exertion. Six months before admission he began to have a racking non-productive cough. Three months before admission his cough became worse and was accompanied by a sensation of a lump in his throat. His coughing was accompanied by a good deal of shaking of the body, shaking of the chest, the attacks coming on three to five times a day. He developed sweating and occasional attacks of vomiting. Two weeks before admission he first spat up a small amount of blood during one of his coughing attacks. A week and a half before admission he noted enough weakness to make him stop work. Five days before entering the hospital he was awakened during the middle of the night by a feeling of fullness in his mouth and spat up half a pint of bright red blood. From that time he continued to cough up small amounts of bright red blood. There was no pain, but an occasional sense of soreness, chiefly in his left chest, during a coughing attack. He lost his appetite. He had lost 12 pounds in the past year and some 40 pounds in the past three years.

He had been married for thirty-five years and had four children living and well. His wife was in fairly good health except for diabetes. He denied Neisserian infection and lues by name and symptom.

He entered the hospital showing evidence of weight loss. He was only moderately well developed. The pupils reacted to both light and accommodation. The arteries of the discs showed sclerosis and there were early cataracts of both eyes. There was quite striking leukoplakia of the tongue. The heart was normal so far as could be demonstrated. The blood pressure was 130/65. There was extensive dullness in the left chest both anteriorly and posteriorly from the axillary line in front and from the midscapular region in the back with diminished breath sounds, voice sounds and tactile fremitus and occasional coarse râles and sibilant and sonorous râles. In the region of the left axilla in front there were increased breath sounds, bronchial in quality, almost cavernous. There was no egophony. No Corrigan pulse was noted. Under examination the peripheral vessels showed definite sclerosis, perhaps not more than is to be expected in a man of his age. The ankle and knee jerks were normal.

The red blood count was 3,750,000, the hemoglobin 75 per cent, the white blood cell count 9,550. There was a normal differential count and slight achromia on smear. The urine and stools were negative. Two sputa were negative for tubercle bacilli and spirochetes. The Wassermann and Hinton reports, which came back after the patient had died, were both strongly positive.

The x-ray report, which came back to us also just before he died, was quite suggestive, almost definite for aneurysm of the middle of the arch and the first part of the descending portion of the aorta, although on admission he had been sent to us with a diagnosis of primary carcinoma of the lung, and until that x-ray report came back that was the diagnosis that was favored in the ward.

Two days after admission, after a normal chart and after coughing a small amount of blood, he suddenly had a massive hemoptysis and died within a few minutes.

CLINICAL DISCUSSION

DR. WILLIAM DAVID SMITH: I have not much to add to the discussion. He came in as a hemoptysis for diagnosis and until he had the laboratory work there was essentially nothing on which to make a diagnosis of aneurysm so far as the heart was concerned. The signs were pulmonary rather than cardiac. I suppose even before he had a Wassermann or an x-ray the leukoplakia might have made us a little more suspicious, for while leukoplakia can occur in smokers it is much more common in syphilitics. There was nothing in the examination of the heart to lead us to think there was either syphilitic aortitis or aneurysm.

DR. GEORGE W. HOLMES: The x-rays of course show a very definite mass in the chest. The only question is whether it is aneurysm or tumor. The thing which confused us a little was the dullness at the root of the lung. That might have been interpreted as a primary carcinoma of the bronchus with metastases to the glands along the trachea or it might have been interpreted as an aneurysm of the descending aorta with pressure on the bronchus producing atelectasis. As I remember it there was no pulsation of the tumor by fluoroscopy. The presence or absence of pulsation by x-ray examina-

*Recently senior interne on the East Medical service.

tion is very unreliable anyway. Some tumors that are aneurysms do not pulsate. In the oblique position the lesion seems to be distinctly associated with the aorta and is of a fusiform character rather characteristic of aneurysm. It does not seem likely that a mass in the region of the hilus would follow the aorta as well as that does and produce such a fusiform shadow. There is absence of lobulation, a point which would also be somewhat in favor of aneurysm. The diaphragm is high on the left side and the left lung field is smaller than the right, also evidence in favor of pressure on the bronchus. We felt that it was more likely to be aneurysm than tumor. The absence of any change in the heart shadow does not help much one way or the other. In luetic aortitis with aortic regurgitation and involvement of the aortic valve we should get a picture of enlarged heart with the characteristic shape; but in the absence of involvement of the valve the heart is usually normal.

DR. JOHN I. BRADLEY: Can you identify the bronchus to the left lower lobe in this film?

DR. HOLMES: There is some evidence of pressure on it. The left descending bronchus is not very well shown, but I think there is some narrowing of the trachea at this point.

X-RAY INTERPRETATION

The findings are probably due to aneurysm of the arch of the aorta with bronchial compression and partial collapse of the left lower lobe.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Aneurysm of the aorta, ruptured.
Possible carcinoma of the lung.

ANATOMIC DIAGNOSES

Syphilitic aortitis.
Aneurysm of the thoracic aorta with rupture into the left bronchus.
Bronchopneumonia, bronchiectasis, lower lobe of left lung.

PATHOLOGIC DISCUSSION

DR. BRADLEY: At autopsy we found a mass corresponding to this shown by x-ray and continuous with the aorta. The right lung and the upper lobe of the left lung were about normal in size, perhaps slightly distended and emphysematous. The left lower lobe appeared relatively small. It was firm, adherent laterally to the parietal pleura, and the pleura was very much thickened. We found the descending branch of the left bronchus going to the left lower lobe adherent to the wall of the aortic mass. On opening the bronchus we found a defect in the anterior wall of the bronchus roughly a centimeter in diameter which was plugged with a mass of soft friable grayish material. On opening the aorta we found a fusiform aneurysm of the thoracic aorta beginning approximately in the region of the arch and extending down to the lower portion of the thoracic aorta, covering a distance of about 12 centimeters. The wall of the aneurysm was quite thin. There was over a good part of it a thick layer of laminated clot. In the medial part of the wall of the lower third of the aneurysm there was a relatively large defect about 2 centimeters in diameter occluded by a fairly recent thrombus. This defect lay just over the defect in the bronchial wall. It is apparently the explanation of the massive hemoptysis.

On section the left lower lobe showed interesting changes. In the central portion of the lung just below the area where the bronchus is adherent to the aneurysm there are a number of dilated spaces, apparently dilated bronchioles. Around them the lung tissue is firm, yellowish-white and fibrous. On the outside of that zone of fibrous tissue around the dilated bronchioles there is an irregular patchy area of consolidation.

The aorta at either end of the aneurysm showed changes typical of syphilitic aortitis. There were several small saccular outpocketings about 3 to 4 millimeters in diameter and about the same depth in the first portion of the aorta, apparently beginning aneurysms. The aortic valve showed practically no involvement, merely a slight separation of the attached margins of the cusps. The changes however were not sufficient to produce any functional impairment. The heart itself was negative.

DR. JAMES H. MEANS: The history is of interest from the point of view of diagnosis. The cough as I understand it was paroxysmal from the beginning, with a good deal of distress and with some choking attacks at night. That and his having hemoptysis later would suggest aneurysm perhaps more than anything else.

DR. FREDERICK T. LORD: The complex of symptoms here is, I should think, fairly typical of aneurysm, which is not a common cause of bleeding. When bleeding does occur with aneurysm it is not ordinarily "out of a clear sky".

There is one case in the autopsy records of interest in this connection. This was a man of thirty-seven with cough without expectoration for three years and an abundant hemoptysis three days before entrance. A recurrence of the bleeding was fatal two days after admission. At autopsy a large branch of the pulmonary artery was found to have ruptured into the right primary bronchus through a cicatrix involving the wall of the artery. Other cicatrices in the trachea and the left primary bronchus together with interstitial orchitis suggested syphilis as a cause.

The present case illustrates the importance of x-ray in diagnosis. Without it, and with small amounts of bleeding and a suspicion of tumor, bronchoscopy might be attempted, but with

great risk of fatal hemorrhage in consequence of the procedure.

The physical signs are of interest in this case. The same complex of signs is common to bronchial occlusion arising from within and compression from without; i.e., dulness, diminished or absent breathing, voice, whisper and tactile fremitus. If the bronchus is partially occluded, sibilant râles are likely to be present on one side of the chest and may serve to suggest the presence and site of the bronchial occlusion, as is often observed with tumors invading the lumen of a bronchus.

DR. HOLMES: The autopsy findings raise an interesting question in regard to the x-ray film. The bright area in the left lung extends to the base so that we see the outline of the diaphragm. If the entire left lower lobe is dull, with no air in it, it is a little difficult to explain the brightness in the lower part of the chest. I suppose it is due to overlapping of the upper lobe.

DR. BRADLEY: There is another possible explanation for that bright area. The appearance of the lower portion of the left lower lobe was different from that of the remaining consolidated areas. There the lung is distended, firm, dark red, and the appearance on gross examination is that of hemorrhagic infiltration rather than of pneumonic consolidation. It may possibly represent a terminal change.

CASE 17352

RELATION OF GALL STONES TO ANGINAL PAINS

MEDICAL DEPARTMENT

PRESENTATION OF CASE

DR. EARLE M. CHAPMAN*: This case is that of a seventy-eight year old widowed German woman who entered the hospital December 30. Her chief complaints were shortness of breath, inability to sleep flat in bed and substernal pain. These dated back over a period of fifteen months. At the time of their onset she had occasional attacks of vomiting with sharp substernal pain radiating to both shoulders and down the left arm. This pain and vomiting usually came together about once each week until three months before entry, when she began to have dyspnea and increase in substernal pain on exertion and to lose weight. She continued in the same condition until six weeks before entry, when she had daily attacks of pain and orthopnea. Two weeks before admission she had edema of the ankles and the dyspnea, orthopnea and pain became almost continuous.

Her past history is not remarkable except for one attack of what she called "gall stones" twenty-nine years before admission.

On physical examination at entry she was a fairly well developed, slightly obese, pink-cheeked old woman sitting up in bed and talking volubly in spite of her dyspnea. She did not have the appearance of a very sick woman. Examination of the head was not remarkable. The heart was greatly enlarged to the right. Tympany obscured the margins of cardiac dullness. The right border of dullness was 7 centimeters and the left 6 centimeters in the third interspace. The action was rapid, the rhythm regular, with a systolic murmur over the aortic area and at the apex, probably loudest at the apex. No diastolic murmur was heard. There was no thrill or shock. The peripheral vessels were very sclerotic. The blood pressure was 170/110 at entry. Examination of the lungs showed a few moist râles at both bases posteriorly. Examination of the abdomen was quite unsatisfactory due to very thick panniculus adiposus. The extremities showed no edema.

Laboratory findings. The urine was loaded with white blood cells. Aside from that it was not remarkable. The blood picture was fairly good, 80 per cent hemoglobin, red blood count 5,000,000, with 8,100 white cells. A Hinton was negative. A guaiac done on the vomitus was negative.

Her course in the hospital was very rapid. At entry we decided not to digitalize her because her pulse rate was only 100 to 110 and she was quite comfortable. The next morning the pulse had dropped down to 85 and she had no particular complaints. On the night of the second day after entry there was a sudden attack of precordial pain radiating to the left arm and she became dyspneic, orthopneic, cyanotic and very sick. The blood pressure fell from 150/110 to 85/60. No friction rub was described in the progress notes. She called a nurse to her side that evening and told her that she was dying, but before the house officer could reach her the end had come.

DR. JAMES H. MEANS: Was there no fever at any time?

DR. CHAPMAN: There was no fever at all.

No x-rays were obtained. No further studies were done. The non-protein nitrogen was not determined.

CLINICAL DISCUSSION

DR. TRACY B. MALLORY: Would anyone be inclined to consider on the history anything else except arteriosclerotic heart disease?

DR. ARLIE V. BOCK: How much chronic indigestion did she have?

DR. MALLORY: I judge from the history that she had considerable.

DR. BOCK: Why may she not have had gall stones?

DR. MALLORY: There was some evidence pointing that way in the past history. She had what was supposed to be a definite attack of gall

*Recently senior interne on the West Medical service.

stones which was cured by Carlsbad waters, a typical German method.

DR. G. COLKET CANER: How long did these attacks of pain last?

DR. CHAPMAN: They lasted about ten to fifteen minutes. They usually occurred one to two hours after meals, after some form of mild exercise such as going upstairs.

DR. MEANS: Was there any radiation?

DR. CHAPMAN: Yes, down both arms.

A PHYSICIAN: Had nitroglycerin been used?

DR. CHAPMAN: It was used without effect.

DR. MEANS: How much morphia did you have to use to get her comfortable?

DR. CHAPMAN: She had morphia grains one-quarter with relief.

DR. MALLORY: It is interesting also that in the last attack of pain when the blood pressure fell to 80/50 she was also given digitalis intravenously and within a few hours the blood pressure was back to 135/95.

A PHYSICIAN: Do you know whether she kept vomiting with these attacks?

DR. CHAPMAN: Yes. An almost constant feature was vomiting with each attack of pain until six weeks before entry, when the pain increased but the vomiting stopped.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Angina pectoris.
Arteriosclerotic heart disease.
Coronary thrombosis?

ANATOMIC DIAGNOSES

Arteriosclerotic heart disease.
Calcification of the coronary arteries.
Cholelithiasis.
Colloid carcinoma of the stomach.
Diverticulitis of the jejunum.

PATHOLOGIC DISCUSSION

DR. MALLORY: The autopsy showed several unexpected things. I think the case is a very interesting one to speculate about. She had an enlarged heart with calcified coronary arteries. Their lumen was not obliterated, however, and there was no infarction. That last attack of pain which was not relieved by nitroglycerin but was by morphine occurred twenty-four hours before death, so that if infarction had been present it would have been perfectly obvious at autopsy. She had gall stones, about 8 small facetted stones. The common bile duct was much dilated, although there were no stones in it. There is no question but that that is significant of gall bladder disease of long duration. I cannot explain the marked dilatation of the common bile duct in any other way. A still more surprising thing was a small area not over a centimeter in diameter of marked induration of the stomach. We did not make much out of that in gross. In the serosa over this area was a little vesicle containing a clear mucoid fluid. That little area turned out to be colloid cancer of the stomach. It was a very well differentiated, slowly growing tumor and it had invaded exceedingly far. It was not over a centimeter in diameter, but it had invaded all the muscles of the wall and serosa. The mucosa over the tumor was not ulcerated. It is very rare to see a cancer of the stomach in which the mucosa appears grossly uninvolved as it did in this case. She also had a very extreme degree of diverticulitis of the jejunum. On the whole that is the least common spot in the entire intestinal tract to get diverticulitis.

Now comes the question of trying to put the puzzle together. Her vomiting, I suppose, might have been caused by the anginal attacks. That is not particularly characteristic however, is it?

DR. MEANS: I think it is not infrequent. The cancer could not have been the cause of death.

DR. MALLORY: Cancer had nothing to do with the death and I doubt if it had anything to do with the symptoms. It was some distance from the pylorus; it could not have obstructed it. It was too small to have interfered seriously with the motility of the viscus.

DR. MEANS: Nor could the gall bladder situation have killed her.

DR. MALLORY: One possibility that occurred to me was that the onset of the attack of gall bladder colic might have precipitated the anginal attacks.

DR. MEANS: I do not see how the attacks described, marked cyanosis and pain and all, could possibly be anything but cardiac. They might have been touched off by the condition in the gall bladder, but the actual attacks it seems to me must have been coronary. The marked drop in blood pressure also confirms that.

DR. MALLORY: I do not believe there is any doubt whatever but that she had coronary attacks. In looking back now one wishes there were a more detailed history of the attacks. Some may have been coronary and some not.

A PHYSICIAN: Was there any evidence of sclerosis of the mitral valve?

DR. MALLORY: There was marked arteriosclerosis at the base of each aortic cusp. Practically every mitral valve in people over forty shows sclerosis and I have never yet seen it produce symptoms or signs, whereas sclerosed thickening at the base of the aortic cusp will produce a systolic murmur.

A PHYSICIAN: At the apex?

DR. MALLORY: You can hear it at the apex. It is usually loudest at the base. There are dozens of cases of that sort without much evidence that it produces much functional insufficiency in itself. I think cases of functional insufficiency usually have also hypertensive disease or something else to explain it.

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"PAINLESS MATERNITY"

A RECENT letter published in the public press is an excellent example of what the negro, who had just received a broadcast curtain lecture from his wife, characterized as a "tirangue". One gets the impression that the writers of the letter do not know what they are writing about; or do not know the meaning of the words they use; or are addicted to sentimental rot. All these things may be true. In any case, it is true that what they say and imply does not correspond to the maternity situation in this country as it presents itself to the medical profession, and the letter does not deserve comment except in so far as it is an example of rather widespread ignorance.

There has developed in recent years the idea that childbirth can be made painless and there has arisen the insistent demand that in every case pain should be not only alleviated but obliterated. This demand is the expression of a hope, which is shared by the medical profession but which cannot be realized now and perhaps may be unrealized after many years.

On the part of the medical profession it is not merely a pious hope. Active investigations are in prosecution for new and better anesthetics, and new discoveries are announced frequently, yet the ideal drug is not available, no matter what one may be willing to pay for it. Every drug that has been tried has some drawback. Chloroform is remarkable for some of its desirable qualities: it is inexpensive, compact, easily administered, pleasant to take, efficient; *but* the patient may die immediately from heart failure, or after a few days from degeneration of vital organs due to chloroform poisoning.

Cesarean section under spinal anesthesia, followed by morphia, sometimes seems to be almost perfect; *but* the morbidity and mortality are too high to permit it to be regarded as the method of choice, unless some definite complication has arisen. Certain forms of "twilight sleep" sometimes give to the patient loss of memory of the childbirth; *but* they are not always successful and even when destroying memory of the event may have undesirable complications. A drug that stops the pain may also stop the pains and so interrupt the process of childbirth. Under varying conditions, different drugs can be and are used for alleviation, but obliteration of the pain entails a distinct and hitherto unavoidable risk. Against this must be weighed the distinct but almost imponderable harm due to the suffering of the patient.

In general the physician looks at the future as well as at the present, weighing the future suffering and the risk then against the present suffering and its risk, and makes his decision as best he can. The sentimentalist sees nothing but the present pain, is aware of no risk, present or future, and is so overwhelmed in the emotional turmoil that no decision in the real sense is possible: there is no hope of standing against the flood until a decision is reached.

It is to be regretted that lack of progress in science should be so unjustly attributed to "unspeakable egotism and blindness" on the part of the medical profession and it is greatly to be desired that correct information be disseminated about so-called "painless maternity".

INTERNESHIP AS A HEALTH RISK

IN a letter printed recently in the *New York Times,* attention is called to the "hardships of internes": lack of pay, subjection to overwork, loss of sleep and exposure to infection which result in a situation that demands the attention of persons interested in the welfare of these physicians in training.

Although the writer of the letter shows such a lack of accurate knowledge of the field that the value of his criticism is greatly impaired, yet he will have rendered a distinct service if he (or she, for the letter is signed only with initials,) is able to bring about a widespread discussion of this aspect of medical education. It

is one with which medical educators are familiar and for changing which several remedies have been suggested.

As was pointed out in the *Journal* recently, the interneship is becoming more widely recognized, perhaps even year by year, as an educational responsibility, and also more attention is being paid to the physical welfare of the interne. While it may be true, as the writer of the letter claims, that for "one of our most celebrated hospitals . . . there are hundreds of applicants for this exceptionally difficult service", there are actually far more positions available for internes in hospitals giving an experience which is now regarded as "acceptable" for training internes, than there are graduates from medical schools each year. Thus the hospitals compete for internes, which is a powerful factor, perhaps the most powerful factor, in improving the status of the interne.

There is indeed the problem of tuberculosis among medical students and internes. The risk here from open tuberculosis of patients is not the one that needs the greatest attention now, for it is a recognized danger. In greater need of emphasis is the general risk that everyone runs who lives unhygienically or in unhygienic surroundings, for this is more often disregarded.

A study made some years ago of groups of college students, medical students and internes showed that, in general, as the individual advanced, his health habits became progressively worse. This increases susceptibility to tuberculosis. It has been claimed that lack of sleep is one of the important conditions among Americans predisposing to disease, especially the "American disease." In the health of college students perhaps the most difficult problem is to get them to take enough physical rest. It is an acute problem among internes.

If one asks along what lines the solution of this general problem is to come, one must think not only of improvement in organization of work, of better hours, better food and better opportunities for recreation (of which rest is certainly a part) but also of the point of view of the medical student and interne. He must be a doctor, a teacher, not only concerning disease, but positively concerning health, and a practitioner of the art not only of relieving sickness, but of promoting health. Only a permanent change in point of view will make fully effective temporary changes in environment.

Since graduates of recognized medical schools can all secure "acceptable" hospital positions now, internes are coming to consider more and more critically what the hospital offers. The first line competition is in teaching: the distinguished teacher, as a rule, draws the best internes. With undistinguished teachers, that hospital will draw the best internes which gives most in other ways, and here provision for the general welfare of the interne is a significant factor. Here mass of material in the way of number of patients is coming to be regarded as less valuable for training than a thorough method of study.

The trend is toward making the interneship an educational procedure in the widest sense. The actual change is slow and we sometimes become impatient at the deliberation of administrative adaptations for which the need seems so obvious. There is needed also a careful compilation of facts concerning the life of the interne and widespread dissemination of information pertaining thereto, as a basis for educating hospital trustees and administrators in regard to the health of the internes, as a part of their ever-increasing burden of responsibilities.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

SMITH, GEORGE GILBERT. A.B., M.D. Harvard University Medical School 1908. F.A.C.S. Urologist, Massachusetts General Hospital and Palmer Memorial Hospital. Surgeon, Collis P. Huntington Memorial Hospital. Address: 6 Commonwealth Avenue, Boston. Associated with him is:

MINTZ, E. ROSS. M.D. Université de Paris 1928. Resident, Urological Service, Massachusetts General Hospital. Address: Massachusetts General Hospital, Boston. Their subject is: "Rupture of the Male Urethra." Page 421.

AYMAN, DAVID. A.B., M.D. Harvard University Medical School 1926. Assistant in Medicine, Beth Israel Hospital. Assistant Physician, Medical Department of the Boston Dispensary. Teaching Assistant in Medicine, Tufts College Medical School. His subject is: "The Early Diagnosis and Early Treatment of Arteriolar (Essential) Hypertension." Page 424. Address: 484 Commonwealth Avenue, Boston.

CATTELL, RICHARD B. A.B., M.D. Harvard University Medical School 1925. Assistant Surgeon, New England Baptist Hospital. Surgeon, Lahey Clinic. Address: 605 Commonwealth Avenue, Boston. Associated with him is:

ANDERSON, CLAUDE. M.D. Jefferson Medical College of Philadelphia 1927. Fellow in Surgery, Lahey Clinic. Address: 605 Commonwealth Avenue, Boston. Their subject is: "End Results in the Operative Treatment of Inguinal Hernia." Page 430.

MARLOW, F. WILLIAM, JR. B.S., M.D. Harvard University Medical School 1927. Assistant in Medicine, Harvard Medical School and the Massachusetts General Hospital. His subject is: "Spontaneous Retroperitoneal Hemorrhage." Page 432. Address: 1284 Beacon Street, Boston.

BOLAND, BENEDICT F. B.A., M.D. Tufts College Medical School 1920. F.A.C.S. Junior Visiting Surgeon for Gynecology and Obstetrics, Boston City Hospital. Assistant in Urology, Massachusetts General Hospital. Assistant in Gynecology and Obstetrics, St. Elizabeth's Hospital. Instructor in Obstetrics, Tufts College Medical School. His subject is: "Conization of the Cervix Uteri with High Frequency Current." Page 434. Address: 270 Commonwealth Avenue, Boston.

HOUGH, GARRY DEN. JR. B.S., M.D. Harvard University Medical School 1921. F.A.C.S. Assistant Surgeon, Shriners' Hospital for Crippled Children, New England Unit, Springfield, Mass. Assistant Orthopedic Surgeon, Wesson Memorial Hospital, Springfield, Mass. His subject is: "Tuberculin Skin Sensitivity in 1000 Orthopedic Cases." Page 437. Address: 146 Chestnut Street, Springfield, Mass.

HIMES, NORMAN E. B.S., M.A. Formerly, Travelling Fellow, Social Science Research Council. Now, Associate Professor of Economics and Sociology, Clark University, Worcester. In charge of Research on Medical History of Contraception for National Committee on Maternal Health, New York City. His subject is: "Note on the Early History of Contraception in America." Page 438. Address: Clark University, Worcester, Mass.

OVERHOLSER, WINFRED. A.B., M.B., M.D. Boston University School of Medicine 1916. Assistant Physician, Westboro State Hospital 1917-1918. Assistant Superintendent, Gardner State Colony 1920-1921. Assistant Superintendent, Medfield State Hospital 1921-1924. Assistant to Commissioner of Mental Diseases 1924-1925. Director, Division for Examination of Prisoners, Massachusetts Department of Mental Diseases 1925-1930. Assistant Commissioner of Mental Diseases, Commonwealth of Massachusetts 1930-. Lecturer, Boston University School of Law. Assistant Professor of Psychiatry, Boston University School of Medicine. His subject is: "Some Psychiatric Aspects of Crime." Page 441. Address: 109 State House, Boston.

DUTTON, FRANK K. M.D., Tufts College Medical School 1915. F.A.C.S. Assistant Surgeon, Springfield Hospital. His subject is: "Needles for the Treatment of Varicose Veins." Page 446. Address: 6 Chestnut Street, Springfield, Mass.

SMILEY, H. EVERETT. Ph.B., Sc.M., M.D. Harvard University Medical School 1922. Pathologist, Providence City Hospital, Providence, R. I. His subject is: "Influence of Inoculated Human Serum Upon Compatibility Tests." Page 447. Address: City Hospital, Providence, Rhode Island.

WHITE, JAMES C. A.B., M.D. Harvard University Medical School 1923. F.A.C.S. Associate in Surgery, Massachusetts General Hospital. Instructor in Surgery, Harvard Medical School. His subject is: "Progress in the Surgery of the Sympathetic Nervous System." Page 449. Address: Massachusetts General Hospital, Boston.

MISCELLANY

DR. DANIEL J. HURLEY NOMINATED TO STATE BOARD

Dr. Daniel J. Hurley, Charlestown surgeon, has been nominated by Governor Ely to the place on the State Board of Registration in Medicine created by the expiration of the term of Dr. Frank M. Vaughan. Dr. Hurley, a native of Boston and a famous Harvard athlete, was graduated from the Harvard Medical School in 1909. Subsequently he was graduated from the Boston City Hospital pathological and surgical services and the New York Lying-in Hospital, later specializing in the study of tuberculosis.

He served as a captain in the army medical corps during the war, and is now associated with the Veterans' Bureau as a specialist in surgery. His appointment will come before the Council on September 2 for confirmation.

Other nominations submitted to the Council, which were confirmed under suspension of rules, were those of Dr. Thomas H. Boylan of Fall River as medical examiner of the third Bristol district, and Dr. Lawrence F. Cusick of Nahant as associate medical examiner of the ninth Essex district.

A BROADCASTING MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

EARACHES IN CHILDREN*

My radio audience! I am very glad to be given this opportunity to talk to you for a short time upon the subject of earache. First, it enables me to tell you of the different causes of earache, and it also gives me the opportunity to touch upon a subject in which I am very much interested, namely, deafness in childhood. At the beginning, may I speak briefly of the different parts of the ear, as often there is some confusion upon this point. First, there is the outer ear, or auricle, in which we are not interested this evening. Leading inwards, is a canal which is closed by the drum membrane, and beyond this is a small cavity, which is called the middle ear. In this small cavity are the little bones, or ossicles. There is an opening leading from the back wall to the mastoid cells which occupy the firm bone behind the ear. From the front wall is a long tube which connects this cavity with the upper part of the throat, and this is commonly

*Broadcast May 13, 1931.

known as the eustachian tube. So you see, this is the only connection that the middle ear has with the outside world. The inner ear is still deeper, and is a small cavity containing the nerve endings, and it is surrounded by very firm bone. We are interested tonight in the middle ear only.

There are very few of us who have not experienced the deep boring pain of a real earache. What is its cause? There are several, and I will speak of the most common one first, namely, a cold in the head, which means infection, which extends from the back of the throat through the eustachian tube into the middle ear. For example, a child is sent out in the afternoon, probably heavily clothed, and after playing about for a time, becomes thoroughly warm, and then stands in the cold wind watching others. The child then feels cold and shivers, and runs into the house. By evening mother may notice a running nose. The child may be more or less restless during the night, and then in the early morning awaken crying with a severe pain in the ear. What has happened? The sudden lowering of the child's resistance due to his becoming chilled, causes a swelling of the membrane in the lining of the nose and throat, which may close the eustachian tube, which alone may cause a slight discomfort and earache, but the true and real pain is caused by the infection extending from the back of the nose to the middle ear through the tube, and a real infection results with formation of a fluid which cannot find an outlet, and it is this pressure on the drum which causes the intense pain.

There is one thing that the mother can do which often relieves the pain, namely, place the child in a warm room with the head elevated, and apply heat in some form to the ear, either by using a hot water bottle, or electric pad. There is really no objection to putting a few drops of warm glycerine into the ear. If the pain does not subside in a very short time, the family physician should be called. These attacks of congestion of nose and throat with earache may occur from time to time, and if this is the case, the cause is generally due to the presence of the growth of adenoid tissue which fills the upper part of the throat, and tends to close the eustachian tube. A proper removal of this tissue generally results in relief. There are certain complications which often arise from an unattended case of earache. It is to be remembered that the inflammation of the middle ear means an extension into the mastoid cells as well, and because of the ear being surrounded by two or three very vulnerable and important structures, it is necessary that proper and adequate attention should be given. Every mastoid infection has its beginning in a simple earache.

It might be well here, to mention the necessity of carefully watching the ears in all cases of diseases of childhood, such as measles, whooping cough, scarlet fever, and mumps. In a great majority of cases, the infection of the ear subsides with proper treatment, but if the drum must be punctured, it means a discharge flowing from the canal. It is very necessary that the case should be watched carefully to avoid complications, already mentioned, and to do everything to cause a cessation of the discharge. One must not forget that the function of the ear is to hear, and the longer the discharge continues, the greater the change which takes place in the middle ear, and the greater the danger of the hearing being permanently decreased. When I tell you that there are three million school children in the United States with deficient hearing, you will realize how important it is that your child have perfect hearing.

What seems at first to be a very simple matter often results not only in the necessity of a mastoid operation, but also may end in a complication of blood poisoning, or may extend to the membranes of the brain, causing meningitis. One of the greatest handicaps in life is deafness, and it is only within the last few years that the seriousness of this has been appreciated. It has been found by investigation that the cause of the apparently backward school child is often due to deficient hearing and not to stupidity. This is also often the cause of the so-called heedless child in the home,—so it is very necessary that children should be examined by the family physician at intervals. The movement for the periodical examination of all school children, which is reaching tremendous proportions all over the country, must result in the solving of one of the most serious problems of child life. It must be remembered that if a child loses the hearing before he has learned to speak, he will never speak, in other words, he will become a deaf mute. And again, if a child loses his hearing after having learned to speak, it is quite necessary that the power of speech be maintained by proper instruction.

Another cause of earache is due to the cleansing of the canal by means of toothpicks, hairpins, etc., which break the skin and allow infection of the little wax and hair glands to occur. The pain caused by this infection is often as severe as a real middle earache.

Swimming is very often the indirect cause of earache, on account of the complications following infection of the nose and throat. Summer is the season for camp life, and every child wants to swim and dive, and it is always a problem whether to allow him to. Salt water is possibly less infectious than fresh water, although there is probably not much difference, as the bacteria which cause the earache are undoubtedly in the child's throat, and are forced into the ear by violent blowing of the nose after swimming or diving. The water in swimming tanks, which is not carefully and constantly changed, may in itself become a carrier of infection. First, as to diving: of course every child wants to dive, but we must remember that we are not fish, and a great many centuries have passed since we were, so that our nasal organs have adapted themselves to air, rather than to water. There is a certain danger in diving from

striking the water at a wrong angle and breaking the eardrum. This is not an uncommon accident and may result in a discharge, and in deafness. It should receive immediate treatment from a physician. The infection which may come from swimming is no different from that of any other source, and if there is pain, the ear should be examined at once. Occasionally there is moderate pain in the ear due to the water causing the wax in the canal to swell. Naturally in every case where there is chronic infection of the nose and throat, and the presence of adenoid tissue, the child should be examined before being allowed to go into the water. Any person who has a perforation in his eardrum should, before going in swimming, insert a cotton vaseline plug, or rubber plug, in the canal of the ear, for protection from water. Of course many people are careful about this, but I wish to emphasize the fact that it is the water which enters through the nose and mouth that generally causes the trouble, in other words, causes earache. It is very necessary to teach everyone, whether swimming or not, to blow the nose carefully, one nostril at a time, rather than both at once. This method reduces the danger of forcing the infection through the eustachian tube into the middle ear.

There are other causes of earache which I must mention before closing. One particularly, because it is so common, and which is not due to an infection of the middle ear, but to a diseased tooth, and is characterized by a short, sharp, neuralgic pain. A similar pain can be caused by exposure to cold and drafts. It is very necessary in cases of this sort that the ears be examined by a physician.

Please remember that our ears are just as important as our eyes, to a happy, prosperous life, and that a simple earache, unappreciated and unattended, may result in a deformity which one must carry through life.

RÉSUMÉ OF COMMUNICABLE DISEASES FOR JULY, 1931

Five thousand seven hundred and one cases of communicable diseases were reported to the Massachusetts State Department of Public Health in July, 1931. This compares not unfavorably with five thousand one hundred and thirty-five reported in July of 1930, the increase being due in part to a somewhat greater prevalence of scarlet fever, chickenpox, mumps and anterior poliomyelitis.

Anterior poliomyelitis was reported in sixty instances this July as compared to twenty-five last July. The disease this year got an earlier start than usual, but in the great epidemic years a much higher total is usually reported for July.

In July of this year, one hundred and sixty-eight cases of diphtheria were reported as against one hundred and thirty-four cases in July of 1930. Although this is lower than the month of June, and is encouragingly low for the month of July, it suggests that our series of record lows for diphtheria extending through eight months may be giving place to new high figures.

Six cases of cerebrospinal meningitis were reported in July of 1931. The figure is so small that no very significant conclusions can be drawn.

Nine hundred and sixty-five cases of measles and five hundred and twenty cases of whooping cough represent reductions over the previous year's figures for these diseases, but are approximately the average number reported for July.

Ninety-two cases of lobar pneumonia and four hundred and forty-six cases of pulmonary tuberculosis are not far from the usual seasonal figure for these two diseases.

Four hundred and eighty-two cases of scarlet fever represent a distinctly high figure for this disease for July, and is about double the figure for July of the previous year. It continues the high figure which this disease has shown all through the Spring of this year.

Thirty-seven cases of typhoid are a rather high figure for July, sixteen cases having been reported in July of 1930. It represents to some extent the expected seasonal increase in the disease this year, however.

Chicken pox, which has been unusually prevalent all during the Spring, is still rather commonly reported with three hundred and seventy cases for July as against about two hundred and seventy-three for July of the previous year.

German measles, mumps and influenza with seventy-one, two hundred and seventy, and nine cases reported, respectively, are not far from the usual seasonal average.

Syphilis and gonorrhea were reported two hundred and thirty-seven and six hundred and thirty-two times, respectively. The reporting of both these diseases continues to improve.

Sixty cases of other than pulmonary tuberculosis were reported this month, and this is the average July figure for non-pulmonary tuberculosis. The disease is singularly constant in its incidence and has been since our records on these forms were begun in 1917.

RARE DISEASES

Actinomycosis was reported from Boston, 1.

Anterior poliomyelitis was reported from Agawam, 1; Alford, 1; Amesbury, 1; Boston, 25; Cambridge, 1; Fall River, 2; Great Barrington, 2; Holyoke, 3; Lowell, 1; Malden, 1; Marlboro, 3; Millis, 1; New Bedford, 2; Newton, 2; Northampton, 1; Norwood, 1; Salem, 1; Saugus, 1; Somerville, 1; Springfield, 3; Waltham, 3; Weston, 1; Weymouth, 2; total, 60.

Epidemic cerebrospinal meningitis was reported from Boston, 1; Holyoke, 1; Malden, 1; Medford, 1; New Bedford, 1; Quincy, 1; total, 6.

Malaria was reported from Boston, 1; Pittsfield, 1; Somerville, 1; Taunton, 1; Worcester, 1; total, 5.

Pellagra was reported from Boston, 2; Northampton, 1; total, 3.

Rabies was reported from Westboro, 1*.

Septic sore throat was reported from Attleboro, 1; Boston, 4; Cambridge, 1; Fall River, 1; Kingston, 1; Lowell, 1; Malden, 3; Waltham, 1; Winthrop, 1; total, 14.

*Delayed Report.

Tetanus was reported from Fall River, 2; Harwich, 1; Holyoke, 1; Northampton, 1; Springfield, 1; total 6.

Trachoma was reported from Cambridge, 1; Methuen, 1; Worcester, 1; total, 3.

Undulant Fever was reported from Worcester, 1.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

	Cases in Entire Pop.				Case Rates per 100,000 Pop.		
	July 1931	July 1930	Proso. Index*	Epi. Index†	July 1931	July 1930	Expected Rates‡
All Causes	5701	5135	—	—	133.3	120.7	—
Ant. polio.	60	25	24	.3	1.4	.6	.6
Diphtheria	168	134	240	.7	3.9	3.1	5.6
Ep. c. s. men.	6	4	4	1.5	.1	.1	.1
Measles	965	1207	1457	.7	22.6	28.4	34.1
Pneu. lobar	92	107	100	.9	2.2	2.5	2.3
Sc. fever	482	231	322	1.5	11.3	5.4	7.5
Tbc. pul.	446	385	378	1.2	10.4	9.0	8.8
Typh. fever	37	16	27	1.4	.9	.4	.6
Whoop. cough	520	680	391	1.3	12.2	16.0	9.1
Chicken pox	370	273	—	—	8.7	6.4	—
Germ. measles	71	94	—	—	1.7	2.2	—
Gonorrhea	632	668	—	—	14.8	15.7	—
Influenza	9	4	—	—	.2	.1	—
Mumps	270	178	—	—	6.3	4.2	—
Syphilis	237	301	—	—	5.5	7.1	—
Tbc. o. forms	60	54	—	—	1.4	1.3	—

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the Boston Medical and Surgical Journal.

‡Calculated from the Prosodemic Index.

PUBLIC HEALTH SERVICE HOSPITALS

The *United States Daily* announces that approximately 500,000 persons apply yearly for care, treatment and physical examination at hospitals and other relief stations which the United States Public Health Service maintains at 155 ports of this country and its possessions.

HOSPITAL FIRE HAZARDS

A pamphlet entitled "Unseen Hazards in Hospitals, Clinics and Other Institutions" has recently been published in Canada as Bulletin No. 1 of the Association of Canadian Fire Marshals and the Dominion Fire Prevention Association, according to *The Modern Hospital.*

"In the foreword it is stated that in hospitals and similar institutions in Canada and the United States fires caused by negligence exceed an average of one per day throughout the year. The main object of the pamphlet is therefore that hospital superintendents and others responsible for the administration of institutions may have brought to their attention some of the existing hazards.

"A paper on 'Unseen Hazards in Hospitals,' presented by George F. Lewis, deputy fire marshal of Ontario, before the last annual meeting of the Association of Canadian Fire Marshals, has given expert consideration to the prevention of fire in hospitals, the dangers of x-ray film storage, hazards from inflammable anesthetics and kindred topics. This paper as well as other valuable information is included in the pamphlet, which is of great interest to all hospital executives. It is published by the Department of Commerce, Ottawa.

NEW YORK ACADEMY OF MEDICINE

At the fourth annual Graduate Fortnight of the New York Academy of Medicine, papers will be read on Phlebitis and Diseases of the Veins by Dr. John Homans, Associate Professor of Surgery at the Harvard Medical School, and on the Association of Cardiac Lesions with Hyperthyroidism by Dr. Frank H. Lahey, Director of Surgery of the Lahey Clinic. Dr. Homans' paper will be read on Friday evening, October 23, and Dr. Lahey's on Monday evening, October 26, at the New York Academy of Medicine.

INFANTILE PARALYSIS FUND

Governor Ely has announced through Dr. George H. Bigelow, Commissioner of Public Health, that he will allocate from his emergency fund $5,000 for use in combating infantile paralysis in Massachusetts.

PREVALENCE OF COMMUNICABLE DISEASES

The United States Public Health Service has issued the following statement regarding the prevalence of communicable diseases in the United States.

The 98 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,480,000. The estimated population of the 91 cities reporting deaths is more than 31,935,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics. Weeks ended July 25, 1931, and July 26, 1930:

CASES REPORTED

	1931	1930	Est. exp.
Diphtheria:			
46 States	487	587	—
98 cities	215	234	513
Measles:			
45 States	2,411	1,966	—
98 cities	854	661	—
Meningococcus meningitis:			
46 States	59	64	—
98 cities	29	311	—
Poliomyelitis:			
46 States	307	222	—
Scarlet fever:			
46 States	951	782	—
98 cities	338	306	332
Smallpox:			
46 States	204	386	—
98 cities	19	42	26
Typhoid fever:			
46 States	758	832	—
98 cities	101	114	99

DEATHS REPORTED

Influenza and pneumonia:			
91 cities	279	352	—

UNITED STATES PUBLIC HEALTH SERVICE

Assistant Surgeon J. L. Wilson has been relieved from duty at Norfolk, Va., as of July 31, and assigned to duty at the United States Marine Hospital, Boston.

CALIFORNIA FORMS A CANCER COMMISSION

The Bulletin of the American Society for the Control of Cancer announces that the California Medical Association has recently formed a permanent Cancer Commission to attack actively the cancer problem in that state. The Commission plans to review and bring to the attention of the medical profession the most modern methods of diagnosis and treatment of cancer, to educate the lay public and to encourage the establishment of well-equipped clinics and hospitals and to further laboratory research in the cancer field. Dr. Charles Dukes of Oakland is chairman, Dr. Lyell C. Kinney of San Diego is vice-chairman and Dr. A. R. Kilgore of San Francisco is secretary of the Commission. Dr. Kilgore is also chairman of the Society for northern California.

PELLAGRA PREVENTION

Scientists of the National Institute of Health at Washington are seeking to ascertain the crops having the highest pellagra preventive values which may be grown most easily by farmers in the area in which pellagra is prevalent.

The nutrition specialists of the United States Public Health Service, working at the Institute, hope that their studies will result in a practical solution of the problem of preventing pellagra, which has become widespread in parts of the dry area.

When the most valuable antipellagric crops are determined, this information will be passed on to State, local and county health units by the Public Health Service.

The work is considered most important, because there probably are as many sufferers from pellagra in the United States as there are in any other country in the world.

In conjunction with its study of the nutritive value of crops, the National Institute of Health is attempting to concentrate—and, if possible, to isolate—the pellagra preventive vitamin. The antipellagric vitamin never has been isolated, although its presence in specific foods is proved by the pellagra preventive effects of such foods when they are eaten.

Studies being undertaken now, however, are based on many years of previous research into the cause of pellagra. This work has been highly successful and undoubtedly has saved many lives up to the present time.

The Institute, or Hygienic Laboratory, as it was known then, discovered the cause of pellagra. This discovery is probably one of the most significant steps forward in public health advancement during the last decade. The late Dr. Joseph Goldberger of the United States Public Health Service found that pellagra was caused by the lack of a certain nutritive substance, or vitamin, in the diet. This finding threw a new light on pellagra, and has made possible the beneficial work now being done by the Public Health Service in attempting to eradicate pellagra.

Already, the Institute has discovered that "black-tongue," a disease of dogs, is closely related to pellagra, the human ailment. These diseases, it was found, will respond in their respective hosts almost identically to the same dietary treatment.

The list of pellagra preventive foods available in the United States probably will be increased as a result of the studies of the National Institute of Health. Studies of the experimental pellagra preventive action of 22 additional foodstuffs have been completed, and the work goes on.—*Issued by the United States Public Health Service.*

CORRESPONDENCE

ON POLIOMYELITIS

Editor of the *Journal*,

I may be innocent and presumably not up-to-date, but as a veteran still interested in exact diagnosis, I should like to raise the question, is not poliomyelitis somewhat snarled up?

First described in 1840, until recent years it consistently maintained its position as a most exact entity, of sharply defined outline and with an unusual distinction in medical terminology viz., that of having a name which represented perfect identity between symptomatology and pathology.

Anterior cornua attacked by an acute degenerative process—followed by paralysis of greater or less degree! The classical clinical description of the child a little ill (cause undetermined) passed over as simple; and presto! sooner or later, paralysis of greater or less degree; while "The disease involves very little danger to life," . . . "the affection is rare in adults" (Flint's Practice).

Now all that might have been superseded, but are we not handed out a similar description, warned of the fallaciousness of the disease, while urged to be on our guard and make an early diagnosis? Thus far an agreement between old and new, but now enters in divergence!

We are told by Boards of Health and Epidemiologists that we can make that early discovery through stiffness of the back and neck with tenderness, and similar signs, in the muscles. We are led to infer that these are pretty constant concomitants at the outset.

Now, these signs belong, in point of origin, to the meninges and posterior roots and do not go with an affection of the anterior cornua, i.e., at an early date. I think one will search in vain for spinal tenderness and rigidity *at the outset*, in the classical descriptions of Essential Paralysis. So with the statements as to its innocence toward life. We have no reason to expect fatality in this pathology, except by its extension.

But now we are told that we have a meningeal type or an encephalic type and that cases can be fulminating. If that is so, we ought not to say that we are dealing with a disease that should from its name, and, speaking generally, its clinical description, have a pathological background of a poliomyelitis, principally or alone.

We had a disease called cerebrospinal meningitis, that occurred sporadically and epidemically and carried a large fatality. Reports of meningitis are few and far between and in one epidemic of infantile, dropt out almost altogether. In a similar way, the Illinois record of infantile discloses in the last 16 years a mortality of 25%. We are told that the spinal fluid and cell count settle the diagnosis. (Query: can any harm be laid at the door of spinal puncture and spinal drainage?) The materies morbi is supposed to be a filterable virus. This hypothesis, for that it must be called, is followed by another, also quite in the modern style, that the reason adults don't have more children's paralysis is because they have had it without recognition and rendered themselves immune (a long step from this to a 25% mortality!). The head of an isolation hospital naïvely says he is disappointed with the serum action, where there is already paralysis, but gratified with its action in the ante-paralytic stage. In this early diagnosis, how much is assumption?

Or have the diseases Cerebrospinal Meningitis, Acute Ascending Paralysis and Acute Poliomyelitis, been harnessed to a common leash?

At all events it will seem that, in the light of these discrepant allegations, we might dispense with that misleading pathological tag—Poliomyelitis. It seems as jejune as Pneumonoconiosis—which we all have.

SAMUEL DELANO, M.D.

New Britain, Conn.,
August 12, 1931.

RECENT DEATH

HOWE—DR. WALTER CLARKE HOWE, Boston surgeon, died at his home in that city, of a massive cerebral hemorrhage, August 21, 1931, aged 59.

He was born in Dedham, June 21, 1872, the son of Elijah and Julia Hunt Howe. Graduating from Phillips Andover Academy he entered Amherst College and received an A.B. there in the class of 1894 and an A.M. in 1899. At Harvard Medical School he took his M.D. *cum laude* in 1898. Then followed internships at the Children's, the Boston City and the Boston Lying-in hospitals, when he established himself in practice in Boston. He was on the surgical staff of the Boston City Hospital for 14 years and for seven years surgeon to the Boston Dispensary. Dr. Howe was surgeon in charge of the football elevens at Harvard for several years, was secretary of the Suffolk District Medical Society and of the Boston Surgical Society. From 1913 to 1916 he was secretary of the Harvard Graduate School of Medicine.

In 1906 Dr. Howe married Miss Amelia Ely, daughter of Judge Frederick D. Ely of Dedham. They had two children, Emily and Frederick, who was graduated from Amherst in 1931. A brother is Dr. Oliver Hunt Howe of Cohasset, a prominent member of the Norfolk South District Medical Society and of the Massachusetts Medico-Legal Society.

Among Dr. Walter Howe's memberships may be mentioned: The Massachusetts Medical Society, the

American Medical Association, the Boston Surgical Society, the New England Surgical Society, the Boston Medical Library and the Harvard Club. He was a scholarly man and popular from his wit and good fellowship among a large circle of friends. He will be greatly missed.

NEWS ITEM

HOSPITAL FOR CHIROPRACTORS — Governor Murray of Oklahoma, according to a recent report in the *United States Daily*, has announced that he probably will propose to the next Legislature a bill to construct a State-owned and operated hospital open to all forms of treatment and for use of chiropractors and other non-medical practitioners.

This announcement followed action of the Board of Regents of the University of Oklahoma in refusing to permit chiropractors to the hospital, operated in conjunction with the medical school here.

NOTICES

NATIONAL TUBERCULOSIS ASSOCIATION

The National Tuberculosis Association, 450 Seventh Avenue, New York City, is planning a special party to The Hague Conference, sailing on the S.S. Westernland August 26, 1932, at low rates for the round trip. A circular regarding the Conference and plans for the party may be secured from the Association.

GOLFERS, ATTENTION

MIDDLESEX SOUTH DISTRICT MEDICAL GOLF ASSOCIATION

Once again we are planning to get together for a fall tournament, this time at the Belmont Spring Country Club, Waverley, Mass., on Wednesday, September 16.

This great course will be at our disposal for play all day—which should give everyone a chance to play at least one round.

Luncheon may be had at the club house for those who wish to play both morning and afternoon, also dinner in the evening, at which time prize winners will be announced and prizes presented.

There will be plenty of prizes for everybody to have a good chance of winning one. No one is allowed to win more than one prize.

Our prizes this fall have been donated by the various surgical supply stores and are really worth winning. Look at the display at the first tee before you start and it will make you try harder.

It makes no difference what kind of a game you "shoot", come out and play. You may surprise yourself. You're sure to have a good time and you're sure to meet a lot of good fellows. Greens' fee $3.00; Assessment $1.00 as usual.

The luncheon and dinner are for the convenience of those who wish to eat at the club and are in no way obligatory on those who cannot remain. They are entirely separate from the tournament.

Any doctors in this district who wish to bring as guests doctors from other districts are privileged to do so. We hope in this way to stimulate interest in other districts to start golf associations and eventually have some interdistrict matches.

WM. T. O'HALLORAN, M.D., *Pres.*,
S. M. BIDDLE, M.D., *Sec.*

INTERNATIONAL MEDICAL POSTGRADUATE COURSES IN BERLIN

These are arranged with the help of the medical faculty of the University by the Lecturers' Association for medical continuation courses and the Kaiserin Friedrich-Haus.

AUTUMN 1931 COURSES

1. Internal medicine with special regard to the clinic (5-17/10) Fee: RM 75.—
2. Postgraduate course on children's diseases (5-17/10) Fee: RM 100.—
3. Postgraduate course covering the sphere of urology (15-21/10) Fee: RM 100.—
4. Postgraduate course on medicinal psychology and psychotherapeutics (26-31/10) Fee: RM 50.—
5. Inter-thoracic surgery with special regard to tuberculosis of the lungs (26-30/10) Fee: RM 80.—
6. Course on physical and dietetical treatment (26/10-4/11) Fee: RM 75.—
7. Single courses on all special fields of medical science, including practical work, are monthly.

For the Spring of 1932 the following courses are planned: X-ray course. Postgraduate course for surgeons. Obstetrical-gynecological postgraduate week. Postgraduate course on internal medicine. Course on diseases peculiar to industrial workers with special regard to medical supervisors' activities. Postgraduate course for oculists.

The information bureau of the Kaiserin Friedrich-Haus, Berlin NW 6, Luisenplatz 2-4 gives information on all questions relating to the above.

NOTICE OF MEETING

AMERICAN ACADEMY OF PHYSICAL THERAPY

ANNUAL CONVENTION, SEPTEMBER 2, 3, 4, 1931,
MOUNT ROYAL HOTEL, MONTREAL, QUEBEC

PROGRAM

WEDNESDAY MORNING, SEPTEMBER 2, 10 O'CLOCK

Business Session

Report of Secretary
Report of Treasurer
Reports of Committees
(a) The Journal
(b) Intermission one-half hour for inspection of exhibits
(c) Publicity

(d) Research
(e) Legislative

Nomination of Officers

WEDNESDAY AFTERNOON, 2 O'CLOCK

1. Education in Physical Therapy.
   Frank H. Krusen, M.D., Philadelphia, Pa.
2. The Use of Physical Measures in the Routine Treatment of Certain Orthopedic Cases. (Motion Pictures.)
   Harold D. Corbusier, M.D., Plainfield, N. J.
   Discussion to be opened by Gilbert E. Haggert, M.D., Boston, Mass.
3. The Therapeutic Employment of Radium.
   Joseph Muir, M.D., New York City.
   Discussion to be opened by Charles Whelan, M.D., Boston, Mass.
4. Inspection of Exhibits.
5. A Plea for a More Careful Search for Oral Focal Infection.
   Robert E. Peck, M.D., New Haven, Conn.
   Discussion to be opened by Byron S. Price, M.D., New York City.
6. Conization of the Cervix Uteri with High Frequency Current. (With lantern slides.)
   Benedict F. Boland, M.D., Boston, Mass.
   Discussion to be opened by Arthur L. Brown, M.D., Winchester, Mass.

WEDNESDAY EVENING, 7.30 O'CLOCK

Banquet

Address of Welcome

Dr. William F. Roberts, Toastmaster

The President's Address

Entertainment (To be announced)

(Dress optional)

THURSDAY MORNING, SEPTEMBER 3, 10 O'CLOCK

1. What Scientific Physical Therapy Is Doing for the Profession and the Laity.
   Arthur L. Brown, M.D., Winchester, Mass.
   Discussion to be opened by George M. Kline, M.D., Commissioner of the Massachusetts Department of Mental Diseases, Boston, Mass.
2. Distribution of Heat Generated in Non-Metallic Bodies by High Frequency Currents.
   Leo E. Pariseau, M.D., Montreal, Quebec.
   Discussion to be opened by Louis E. Mannix, M.D., Springfield, Mass.
3. Inspection of Exhibits.
4. Therapeutics of Static Electricity.
   William D. McFee, M.D., Boston, Mass.
   Discussion to be opened by Arthur H. Ring, M.D., Arlington, Mass.
5. Correlation of Histologic Structure with Treatment of Cancer. (With lantern slides and motion pictures.)
   George A. Wyeth, M.D., New York City.
   Discussion to be opened by Grant E. Ward, M.D., Baltimore, Md.

THURSDAY AFTERNOON, 2 O'CLOCK

1. Physical Therapy and Its Relation to the Practice of Medicine.
   Robert C. Hughes, M.D., Paoli, Pa.
   Discussion to be opened by Charles E. Street, M.D., Springfield, Mass.
2. Physical Therapy from the Surgeon's Point of View.
   Frederic Jay Cotton, M.D., Boston, Mass.
   Discussion.
3. Inspection of Exhibits.
4. Arthritis. Detailed Report of a Case.
   Charles F. Stokes, M.D., Miami, Florida.
   Discussion to be opened by John L. O'Toole, M.D., Haverhill, Mass.
5. The Present Status of Electrosurgical Methods.
   William L. Clark, M.D., Philadelphia, Pa.
   Discussion to be opened by Edward H. Trowbridge, M.D., Worcester, Mass.
6. The Prostate and Its Treatment.
   Burton B. Grover, M.D., Colorado Springs, Colorado.
   Discussion from the floor.

FRIDAY MORNING, SEPTEMBER 4, 10 O'CLOCK

1. Radium in Cancer Therapy.
   Douglas Quick, M.D., New York City.
   Discussion to be opened by Walter C. Barker, M.D., Philadelphia, Pa.
2. The Treatment of Oral Cancer.
   James D. Morgan, M.D., Philadelphia, Pa.
   Discussion to be opened by Vernon C. Stewart, M.D., Woburn, Mass.
3. Inspection of Exhibits.
4. The Use of Maggots Following Electric Coagulation Treatment of Cancer.
   Thomas L. Smyth, M.D., Allentown, Pa.
   Discussion to be opened by George E. Percy, M.D., Salem, Mass.
5. Principles of Radiation Therapy.
   Herman A. Osgood, M.D., Boston, Mass.
   Discussion to be opened by Thomas E. Hays, M.D., Burlington, Vt.
6. Some X-ray Diagnostic Procedures.
   Stanley A. Wilson, M.D., Burlington, Vt.
   Discussion to be opened by Frederick W. O'Brien, M.D., Boston, Mass.

SOCIETY MEETINGS

CONGRESSES AND CONFERENCES

Aug. 31 - Sept. 4 — Neurologists will meet in Berne, Switzerland. See page 896, issue of April 23.

September 2, 3, 4 — American Academy of Physical Therapy. See page 468.

September 11-12—New England Surgical Society. See page 366, issue of August 13.

September 14-17—The American Public Health Association. See page 415, issue of August 20.

September 22, 23, 24—The Clinical Congress of the Connecticut State Medical Society. See notice on page 365, issue of August 13.

October 5, 6, 7, 8—American Congress of Physical Therapy. See notice on page 272, issue of July 30.

October 12-16—Announcement of the Clinical Congress of the American College of Surgeons. See page 1175, issue of May 28.

October 19-22—The Interstate Post Graduate Medical Association of North America. See page 1125, issue of May 21.

October 19-30—Graduate Fortnight of the New York Academy of Medicine. See page 1230, issue of June 4, and page 465 of this issue.

April 4-8, 1932—The American College of Physicians. See notice on page 1232, issue of June 4.

Autumn 1931—Spring 1932—International Medical Postgraduate Courses in Berlin. See page 468.

DISTRICT MEDICAL SOCIETIES

Bristol North District Medical Society

September 17—Details to be announced.

Middlesex South District Medical Society

September 16—Golf Association. See page 468.

BOOK REVIEWS

Diabetes—Its Treatment by Insulin and Diet. A Handbook for the Patient. By ORLANDO H. PETTY, M.D. Fifth Edition, F. A. Davis Company. Philadelphia. 231 pages. Price $2.00.

The new edition of this manual for physicians and patients has been enlarged by the addition of new material dealing with the vitamins, obesity and diabetic hygiene, but chiefly by twenty-one pages of sample diets for the use of those following the orthodox dietary rules of the Jewish faith. The food values for all foods have been corrected according to the values given in the United States Department of Agriculture circular, published January, 1931.

The modern diabetic patient needs to know a great deal about his disease if he is to give his physician the best coöperation. Few physicians will fail to attempt to teach such patients, and all will agree that some sort of manual or printed instructions are necessary. Dr. Petty's book gives simple instruction in the nature and methods of diagnosis of diabetes, a discussion of some of the physiologic problems, such as the renal threshold, and is devoted chiefly to the dietary management and the use of insulin. It is not so complete as some other manuals and for that reason will be more useful to patients than to physicians.

A Handbook on Diseases of Children including Dietetics and the Common Fevers. By BRUCE WILLIAMSON. William Wood & Company and E. & S. Livingstone. Price $3.50.

This textbook as the title implies is devoted essentially to the feeding and treatment of the various diseases of infants and children. A brief paragraph summarizing the major symptoms and signs of a particular disease precedes a more detailed exposition of treatment. The clinical description of the diseases seems to the reviewer inadequate for the physician, especially the general practitioner, who would find this book most useful. The various forms of treatment have been successfully presented with an attempt to evaluate the most desirable methods.

The book contains valuable information in regard to recent therapeutic methods used in modern pediatrics. The text is more in the nature of a compilation and does not lend itself to a pleasing literary style. It is recommended as a guide to the recent methods of feeding and treatment of infants and children.

Surgery—Its Principles and Practice for Students and Practitioners. By ASTLEY PASTON COOPER ASHHURST. Fourth Edition. Lea & Febiger. 1931. Price $10.00.

This is a single volume Surgery of 1145 pages with 1063 illustrations and an index of 33 pages. The three previous editions make necessary but little comment on this fourth edition. Despite the advancement in Surgery in the past few years there have been added, as the preface of this edition states, only five pages. This statement indicates the thoroughness of the revision of this edition. At least sixteen gross sections have been added or entirely rewritten. In a single volume of this scope the experienced Surgeon will, probably, fail to find the exposition of certain methods of procedure which he personally employs. He may find, on the other hand, procedures with which he may disagree. For example, many surgeons will take exception to one or more statements in the paragraph dealing with the treatment of perforated gastric or duodenal ulcer (p. 899).

> ". . . If suture is impossible, the perforation should be tamponed with gauze. If operation is done within a few hours of perforation, and especially if suture stenoses the pylorus, or if the sutures tear out, posterior gastrojejunostomy should be done at the same time. In many early cases the abdominal fluid is sterile, particularly if perforation occurred in a fasting stomach, and perhaps because of the hyperacidity of the gastric juice; in all cases the pelvis should be drained (through a suprapubic incision), but in recent cases it is not necessary to drain the upper abdominal wound."

Only a surgeon and teacher of considerable experience, and a master of English could present in 1145 pages so instructive and so readable a volume on Surgery. In so restricted a compass, the principles of Surgery rather than the operative technique are to be sought. Nevertheless, this exposition of so broad a subject in so limited a space is so practical and so scholarly that it may be consulted with profit both by the maturing student and the matured surgeon.